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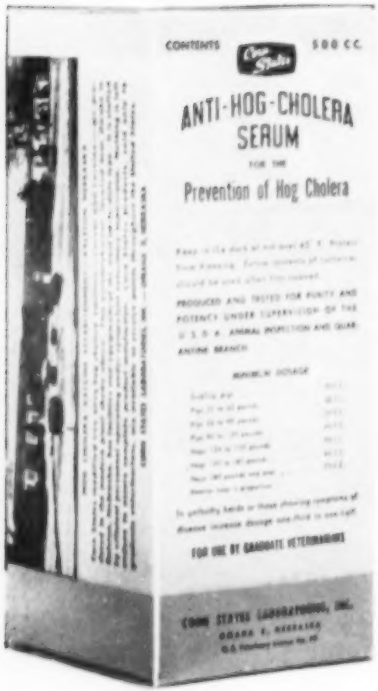
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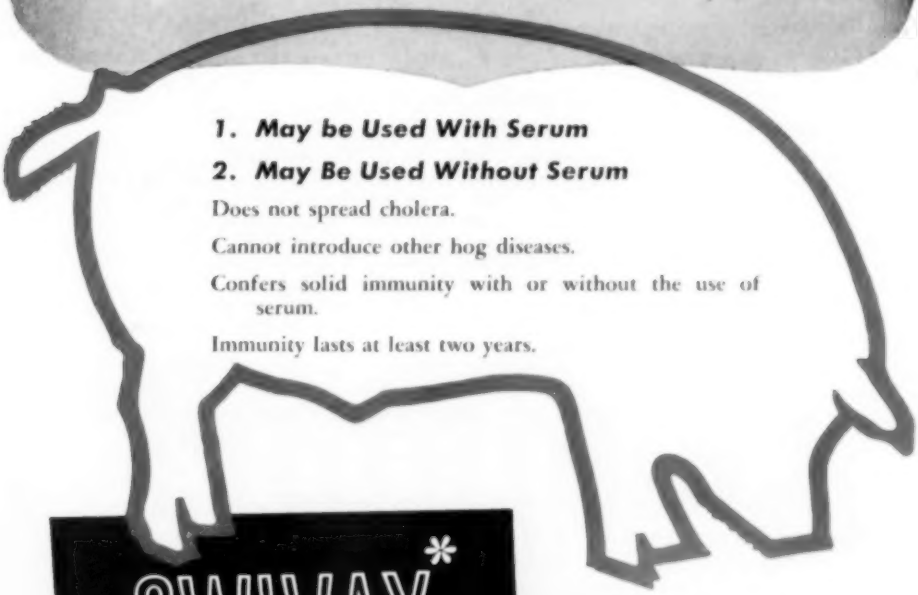

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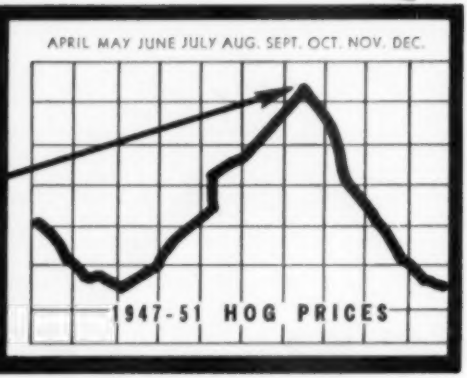

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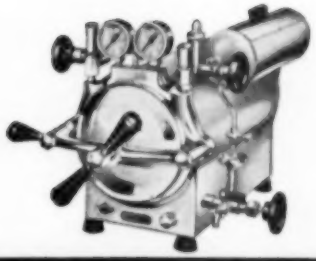

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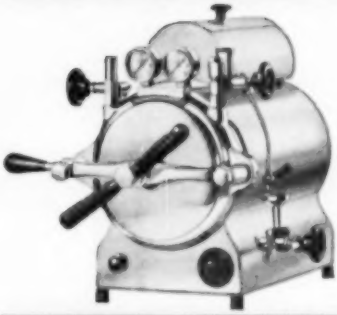

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Veterinary Medical Activities

✦ President A. H. Quin appeared on the programs of the annual meetings of the Louisiana Conference for Veterinarians, Baton Rouge, February 1-2; the Illinois V. M. A., February 14-16; and the Missouri V. M. A., February 21-22.

✦ President-Elect Floyd Cross appeared on the program of the annual meeting of the Nevada V.M.A. held on February 28-March 1.

✦ The Board of Governors (Executive Board Chairman S. F. Scheidy, President A. H. Quin, and President-Elect Floyd Cross) met at Association headquarters Feb. 11-12, 1955.

✦ The AVMA Special Committee on Graduates of Foreign Veterinary Colleges met at Association headquarters January 31-February 1. Those attending included Chairman John D. Gadd, Drs. C. F. Clark, Ernest O. Froelich, T. Lloyd Jones, Frantisek Kral, and Colonel Wm. E. Jennings.

✦ Executive Secretary J. G. Hardenbergh attended the meeting of the Examination Committee of the National Board of Veterinary Medical Examiners in New York City February 19-20. The Committee met to revise the examination that was used in 1954.

✦ Assistant Executive Secretary Kingman attended the Fifty-First Annual Congress on Medical Education and Licensure of the A.M.A. which was held in Chicago on February 5-8.

✦ Twenty-three officers of the Army and Air Force Veterinary Corps attending the Dairy and Meat Hygiene School at the Quartermaster Depot, Chicago, visited Association headquarters on Feb. 2, 1955. Members of the AVMA staff spoke to the group on the organization and activities of the Association and other professional matters.

✦ Assistant Executive Secretary Kingman attended the annual meeting of Livestock Conservation, Inc., held in Chicago on February 2-4.

✦ Editor W. A. Aitken discussed "Swine Erysipelas Problems" at the Missouri V.M.A. convention held in St. Louis on February 21-22.

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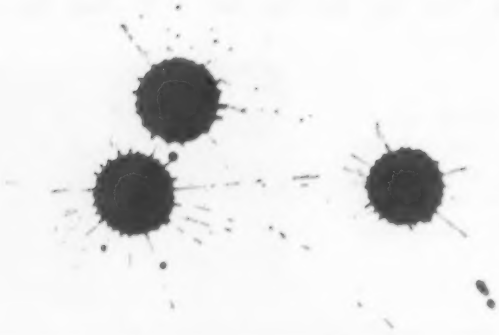

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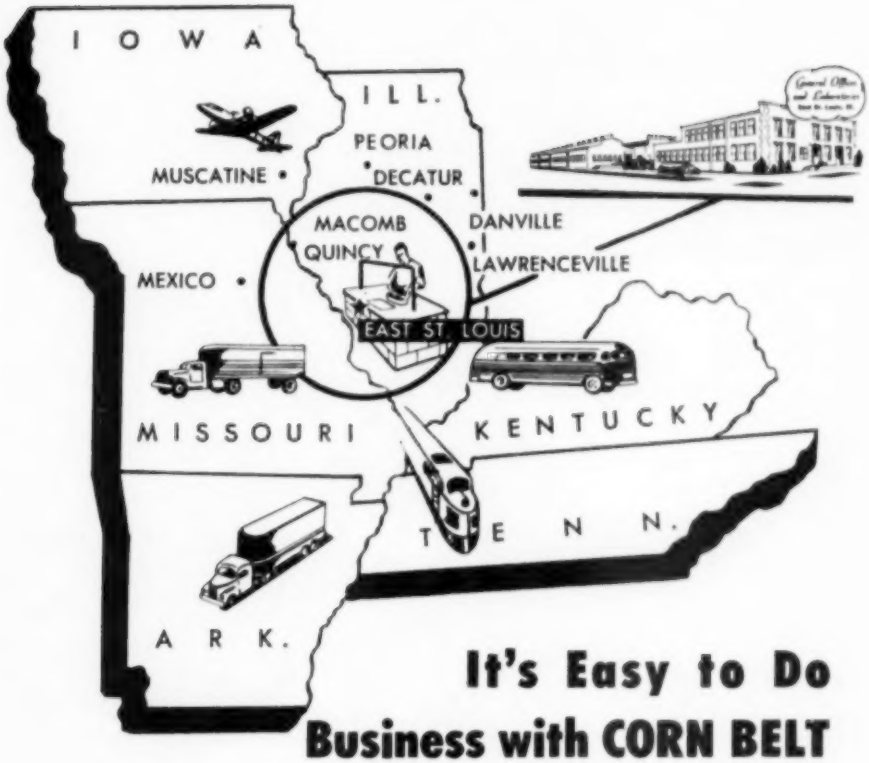

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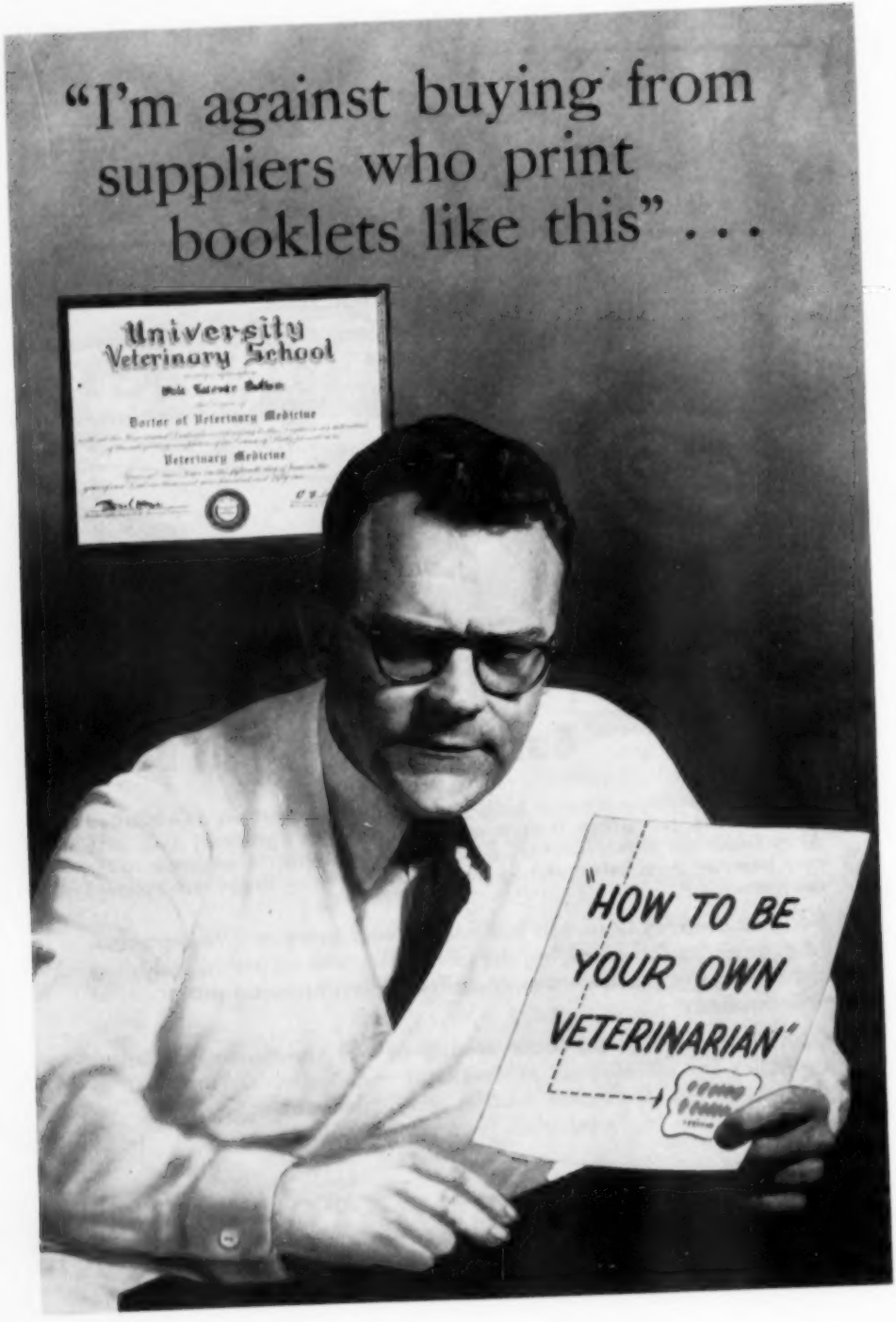
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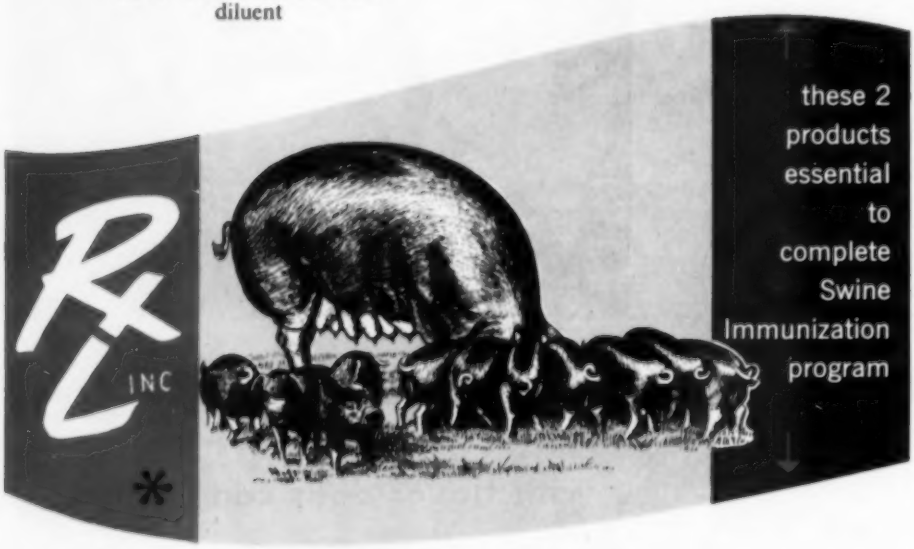

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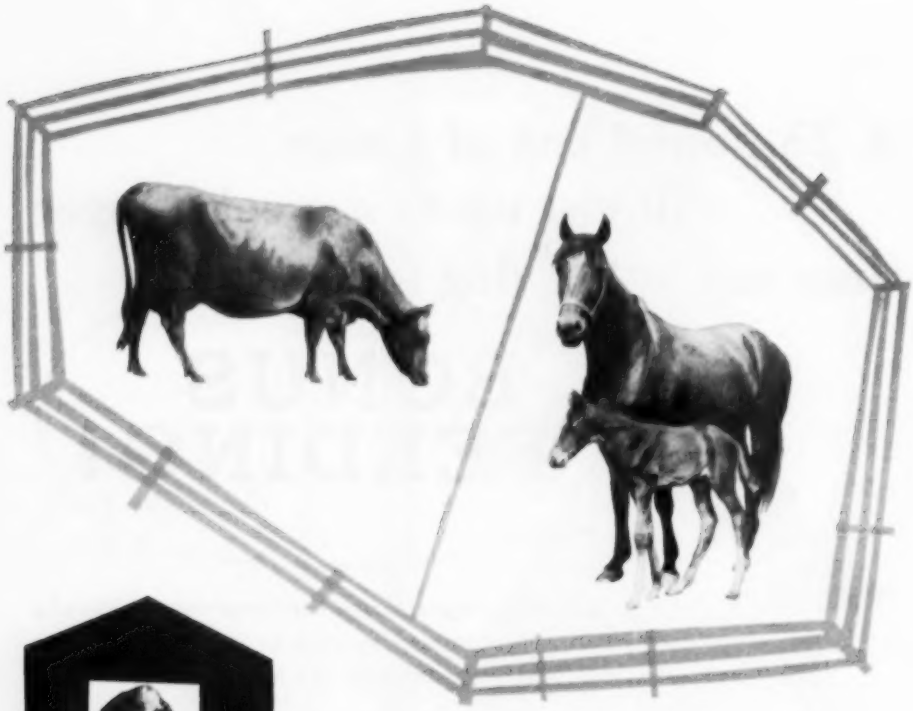

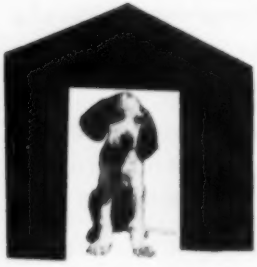

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*Rachman, M., and Frucht, T. R.: Vet. Med. *49*:341, 1954.

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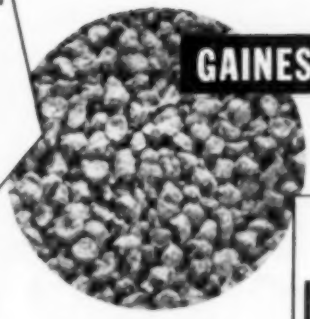

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VOL. 126 MARCH, 1955 No. 936

The Effect of Viral and Other Infections of the Dam on Fetal Development in Swine

I. Modified Live Hog Cholera Viruses — Immunological, Virological, and Gross Pathological Studies

G. A. YOUNG, D.V.M.; R. L. KITCHELL, D.V.M., Ph.D.;
A. J. LUEDKE, D.V.M.; J. H. SAUTTER, D.V.M., Ph.D.

Austin and St. Paul, Minnesota

A NEW PROBLEM which has confronted the practitioner since the introduction of rabbit-modified hog cholera viruses in the field as immunizing agents for hog cholera is the development of abnormal swine fetuses in dams vaccinated with these products in early pregnancy. The gross pathological findings of this condition were first described by Pinkerton[1] as edema of newborn swine. He made no reference to hog cholera infection as a possible cause of the condition. Young,[2] however, attributed early vaccination of the dam with rabbit-modified hog cholera virus as one specific cause of edematous fetuses. Preliminary reports of the experimental production of this condition have been made by Kitchell *et al.*[3] and Sautter *et al.*[4] This communication describes further experimental work concerning this problem. A companion paper[5] describes in detail the histopathology of the fetuses.

From the Hormel Institute, Austin, Minn., and School of Veterinary Medicine, University of Minnesota, St. Paul: associate professor (Young) in veterinary medicine at the Hormel Institute; professor and head (Kitchell), Division of Veterinary Anatomy, and professor and head (Sautter), Division of Veterinary Pathology, School of Veterinary Medicine, University of Minnesota; Dr. Luedke is now located at Pennsylvania State University, State College, Pa.

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Appreciation for technical assistance is extended to N. R. Underdahl, R. W. Hinz, and Peggy McConnell.

MATERIALS AND METHODS

Experimental Dams—All gilts and sows used in the experiments were from herds from which reliable histories could be obtained. They were grouped according to previous immunization history as follows: (*A*) no previous immunization—Chester White (CW) dams from Hormel Foundation herd, (*B*) immunized with commercial rabbit-modified hog cholera (HC) virus without serum — CW as in (*A*), (*C*) immunized with a commercial chemically inactivated HC vaccine—CW and CW-Duroc crosses from local farm herd, (*D*) immunized with virulent HC virus and serum—Minnesota 1 and Minnesota 2 crosses from Southeast Experiment Station, Waseca, Minn.

The dams were quartered in 12- by 18-ft. houses in drylot with double fencing with 6 ft. between fences. Control dams and dams to be injected with rabbit-modified HC virus after breeding were housed together for the preliminary immunization treatments and breeding. Those dams which were injected ten to sixteen days after breeding were removed from the group preceding injection and were housed on a separate farm 1.5 miles from the regular herd. All dams received the same well-balanced rations throughout the experiments.

Fetal Pigs.—Fetuses collected for observation were obtained as follows: The dams were destroyed at approximately seventy to 105 days after breeding, at which time the pigs were removed by hysterectomy[6] or from the dam shortly after slaughter (earlier experiments). Both live and dead pigs were identified and returned to the laboratory for detailed study. Uteruses which appeared nongravid or contained only dead pigs were returned to the laboratory intact for examination. In the more recent experiments, blood samples were taken from the anterior vena cava of

all live pigs for biochemical analyses. The pigs were then killed with chloroform for necropsy. The procedures used have been described previously.[1]

Viruses Used.—Two rabbit-modifed HC viruses have been used to inject pregnant dams ten to sixteen days after breeding. One was a commercial rabbit-modified HC virus of lapin origin and was injected intramuscularly into pregnant dams without serum. One recommended dose of this HC virus was virulent enough to kill or make seriously ill 10 to 20 per cent of 12-day-old test pigs* within a fourteen-day test period. The other virus used for injecting pregnant dams was a commercial rabbit-modified HC virus of porcine origin. In conjunction with this virus, 30 cc. of concentrated antihog cholera serum was used on all injections into pregnant dams. A single dose of this modified virus without serum routinely killed or made seriously ill all 12-day-old test pigs within fourteen days.

Test for Immune Response.—An *in vitro* serum-neutralization test was used to demonstrate that infection had occurred and immunity had developed in 2 of the injected pregnant dams (group A—injected, table 1). The test was as follows: 2,000 intranasal infectious units (equivalent to 1,000,000 intramuscular doses) of titered virulent HC virus in 1 ml. of hormone broth was mixed with an equal volume of postinjection serum in a test tube and placed in a water bath at 37 C. for one hour. (Postinjection serums were taken 21 days after inoculation of virus into the pregnant dams.) A serum sample taken before injection of the dam was similarly mixed with virus and put in the water bath. Ability or failure of the serum to neutralize virulent HC virus was determined by inoculation of 12-day-old test pigs intranasally with 1 ml. of the serum-virus mixture. Temperatures were taken on the seventh and fourteenth days and pigs living on the fourteenth day were destroyed for necropsy and observation for HC lesions.

Test for Virus in Fetal Tissues.—At necropsy of the fetal pigs, portions of spleen were removed, placed in test tubes, sealed, quickly frozen in acetone-dry ice, and stored at —20 C. Spleens from representative fetuses were later tested for presence of HC virus. The spleens were thawed at room temperature, triturated in a sterile mortar, and diluted 1:10 with hormone broth; 1 ml. of the 1:10 suspension was given intramuscularly to 12-day-old test pigs. Observation of the pigs for evidence of HC infection was the same as in the serum-neutralization test.

Test for Leptospirosis.—Serums from the last 13 dams used in the experimental series were taken at the beginning and end of each experiment and were tested serologically for evidence of leptospiral infections. The agglutination-lysis test† was used to check for antibodies against nine species of Leptospira. Those used as test antigens were *L. icterohaemorrhagiae, L. canicola, L. grippotyphosa, L. bataviae, L. hebdomadis, L. autumnalis, L. australis, "A", L. Australis "B"*, and *L. pomona.*

RESULTS

The results of experiments with 40 litters of pigs are summarized in table 1. The marked difference between 3 per cent abnormal pigs obtained from the 16 control sows and 38 per cent abnormal pigs from the experimentally injected sows is good evidence that the use of HC virus is associated with this condition. Previous vaccination or immunity is no guarantee that abnormal fetuses or pigs will not

*Unless otherwise specified, disease-free, antibody-devoid pigs were used. They were obtained by hysterectomy[4] and raised in isolation on modified cow's milk without colostrum.[5]

†We are deeply indebted to Dr. Karl Reinhard of the Rocky Mountain Laboratories for testing these serums.

TABLE 1—Summary of Data Obtained from Litters from Control Dams and from Dams Injected During Early Gestation with Rabbit-Modified Hog Cholera Viruses

Dams — control and injected			Litters obtained—70th and 105th days of gestation					
					Gross abnormalities			Abnormalities (%)
Groups	Immunization history (prebreeding)	Experimental injection at 10-16 day of gestation	No. of litters	Total No. fetuses	No. of fetuses	No. of dead fetuses	No. of litters	
A. Control	Not immunized	None	8	83	5	5	2	4
A. Injected	Not immunized	Modified virus*	6	61	34	26	5	56
B. Control	Modified virus†	None	3	27	0	0	0	0
B. Injected	Modified virus†	Modified virus†	2	27	2	2	2	7
C. Control	Inactivated vaccine	None	4	42	2	1	1	4
C. Injected	Inactivated vaccine	Modified virus*	13	101	34	15	9	34
D. Control	Serum and virulent virus	None	1	11	0	0	0	0
D. Injected	Serum and virulent virus	Modified virus†	3	26	11	0	2	42
Totals:		Control	16	163	5	4	3	3
		Injected	24	215	81	43	18	38

*Three dams in group A and 4 in group C received rabbit-modified HC virus, lapin origin, without serum. Three dams in group A and 9 in group C received rabbit-modified HC virus of procine origin with 30 cc. of HC antiserum.
†Rabbit-modified HC virus of lapin origin without serum.

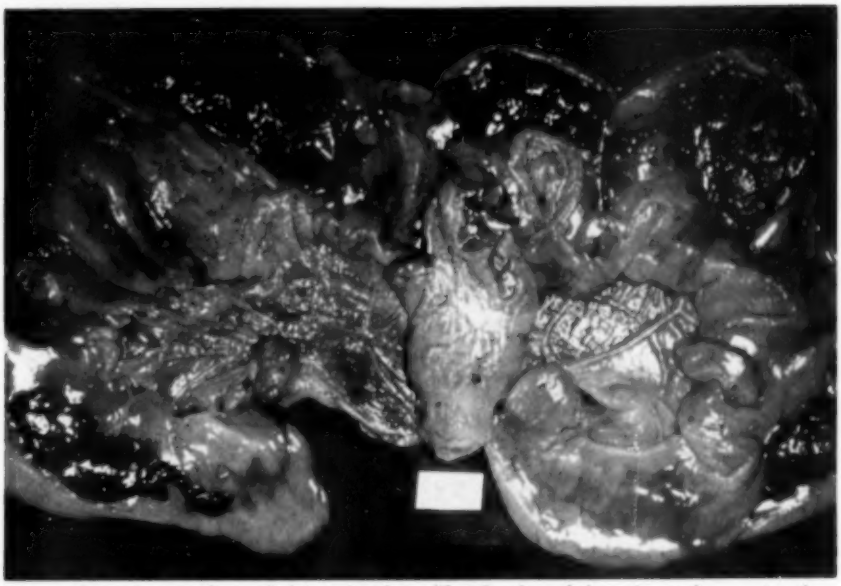

Fig. 1—Opened uterus from gilt injected with modified live hog cholera virus and serum ten days after breeding. Dark masses are resorbing fetuses which would have been 106 days old.

result from injection of the dam with rabbit-modified HC virus.

Leptospirosis was ruled out as a possible contributor to the abnormalities observed in experimental litters. Only one of the 26 serums tested had antibodies to leptospiral antigens, and it reacted to *L. icterohaemorrhagiae* antigen at a 1:100 dilution.

In the same series of dams, serums from

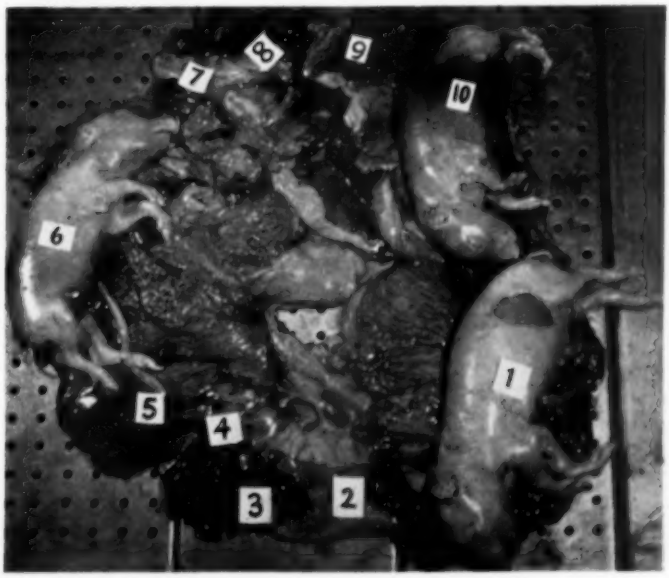

Fig. 2—Opened uterus of gilt injected with modified live hog cholera virus and serum fifteen days after breeding. Picture taken 104 days after breeding. Only 3 of 10 fetuses survived until late gestation. Only pig 1 was living at time of examination.

Fig. 3—Uterus from gilt injected with modified live hog cholera virus sixteen days after breeding. Fetuses were 105 days old at time of picture. Only 1 pig was alive and showed (lower left hand corner) typical ascites and edema.

2 cholera-susceptible dams were tested before and after being injected with rabbit-modified virus and serum for serum-neutralizing (SN) antibodies to virulent HC virus. The serums taken from these dams before they were given virus failed to neutralize 1,000 intranasal infectious units of virus. Both serums taken twenty-one days after injection of virus had sufficient SN antibody to make the test 1,000 units of virulent HC virus innocuous for test pigs. Thus it was established that the virus used was capable of eliciting immunity in the dam by causing active infection.

The spleens from 10 fetuses taken from litters of 4 dams which had been given

Fig. 4—Close-up of living pig shown in figure 3. Notice generalized subcutaneous edema.

rabbit-modified HC virus of porcine origin and serum were tested for the presence of HC virus in susceptible 12-day-old test pigs. Virus capable of causing death of test pigs, with typical symptoms and lesions of HC, was found in 6 of the 10 pigs tested. These 6 pigs were grossly abnormal, whereas the 4 pigs which did not have demonstrable HC virus in their spleens were grossly normal in appearance. No HC virus was demonstrable in the spleens of the dams.

Pictures from three representative experimental litters are presented to illustrate some of the disorders which resulted from injection of HC virus into the pregnant dams. Figure 1 shows an opened uterus from a sow given modified live HC virus and serum ten days after she was bred. The uterus was removed 106 days after breeding. The dark masses, actually reddish brown, are the remains of fetuses which had grown to approximately 50- to 60-day size, died, and were in a stage of aseptic resorption at the time of examination. The unopened uterus appeared flaccid and gave no external evidence of containing macerated and resorbing fetuses. The corpora lutea of pregnancy were retained and the dam had given no external evidence of not being pregnant.

Figure 2 shows an opened uterus from a sow injected with modified live virus and serum fifteen days after breeding. The uterus was examined 104 days after breeding. Ten fetuses were found in different stages of decomposition. Only 1 pig (No.1) was living and it died shortly after delivery. This pig had moderate edema and ascites.

Figure 3 pictures a third litter from a dam injected with modified live virus and serum sixteen days after breeding. The uterus was removed from the dam and examined 105 days after breeding. Again only 1 living fetus was found, although 10 had started and had died periodically during the gestation period. The living pig, in the lower left hand corner (fig. 3), showed marked ascites and edema. It lived for only a few minutes. This pig (fig. 4) is typical of field cases of pigs born alive but only after considerable difficulty in labor on the part of the sow. There were 312 cc. of pleural fluid and 225 cc. of ascitic fluid in this pig. The body organs, especially the lungs, were small (fig. 5). This may have been a result of pressure from the pleural aand ascitic fluids. The kidneys were characteristically pitted and irregular in shape (fig. 6).

A variety of abnormalities were found

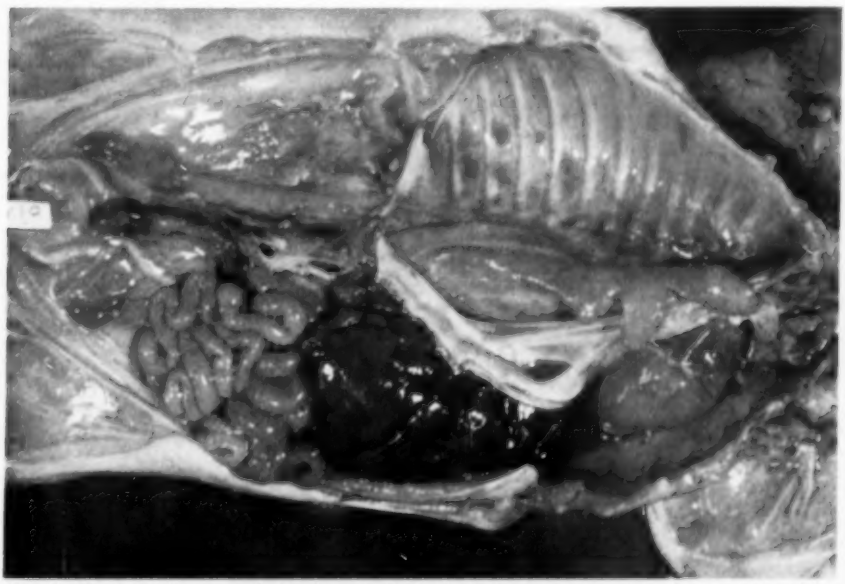

Fig. 5—The internal organs of pig shown in figure 4. Notice how organs have been suppressed by large amount of pleural and peritoneal fluid.

in fetuses within experimental litters. These are summarized in table 2. In addition to those listed in the table, other abnormalities observed were undescended testes, multiple septums of the gall bladder, deformed ears and legs.

TABLE 2—Abnormalities Observed Among Fetuses from Dams Injected with Modified Hog Cholera Viruses During Early Gestation

Abnormalities	No. of fetuses
Dead fetuses	43
Ascites*	22
Edema*—subcutaneous	6
body	7
perirenal	4
mesocolon	6
colon	2
Deformed noses*	6
Malformed kidney*	4

*Only live fetuses considered.

DISCUSSION

There are several points in the studies reported which are important for the practicing veterinarian to keep in mind. Both experimental data and field observation make it clear that rabbit-modified HC viruses have adverse effects on developing fetuses when injected into the dam in early gestation. There is also some field and experimental evidence which indicates that vaccination in other stages of gestation may result in damaged fetuses or poor livability of pigs farrowed.[5] Much more research is needed before a good understanding of the relationship of stage of gestation and vaccination time can be had.

From a disease control standpoint, fetuses which are aborted with a history of HC vaccination for the dam should be handled as infected material which should be burned or buried. Demonstration of HC virus in the spleens of some of the aborted fetuses indicates that they are a source of infection and should be kept away from other swine, rodents, carnivores, and insects.

If modified HC viruses can adversely affect fetuses by attacking them in their early period of development, other infectious agents may do similar damage. The main requirement would be an active infection of the dam during which time bacteremia or viremia occurs so that the infectious agents can reach the fetuses. The type of damage done to the fetuses would be dependent upon the types of tissues attacked by the agent and its basic pathogenicity. A high incidence of stillborn or dead newborn pigs should always suggest the possibility that an infection had occurred within the herd at the time the dams were bred or shortly after. Practical farm management should include segregation of dams shortly before breeding and during gestation. This is especially important on farms where disease exists among feeders or other swine.

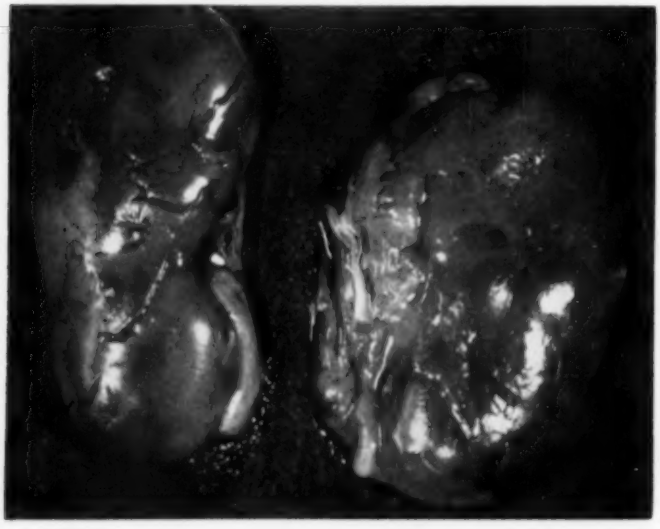

Fig. 6—Kidneys from pig shown in figure 3. Notice marked pitting and irregular shape.

The broad problem of early gestational infection of the dam suggests the desirability of change in management practices in swine husbandry. Boars are commonly brought into a herd and placed immediately with sows and gilts. Should such a boar be a disease carrier, the sows and gilts are simultaneously bred and exposed to infection. Some disease, even though mild, may develop in the dam at the most critical stage of development of the fetuses. Poor litters may result. It would seem more logical to place the boar, assuming that he has a negative brucellosis record, in contact with some of the sows and gilts not in heat for a few days and then withhold him from breeding the females for another month. The contact females should then be returned to the brood sow herd. Such a practice would allow time for the sows and gilts to recover from a disease they might contact from the boar before breeding so that the fetuses would not be affected.

Failure of more than a few gilts or sows to have pigs approximately 114 days after breeding should be cause for a thorough study of the herd history. They may have settled normally, but some agent may have killed the fetuses so that they have been or are being aseptically resorbed. Abortion may not occur and the corpora lutea of pregnancy may be retained so that the sow will not manifest estrus. As a result, while she may be considered a nonbreeder, she may actually be a victim of circumstance. There should be hesitancy in having the farmer discard his breeding stock, especially if it has performed well in previous years.

SUMMARY

Edema of newborn pigs and a variety of abnormalities have been experimentally produced by injection of pregnant sows or gilts with rabbit-modified hog cholera viruses, with or without immune serum. These injections were made ten to sixteen days after breeding. Abnormalities were produced in 38 per cent of the fetuses of 24 litters from the experimentally injected dams as compared with 3 per cent abnormalities among 16 control litters. Some of the difficulties encountered are illustrated.

Serological tests eliminated leptospirosis as a primary or associated agent in the experimentally produced abnormalities. Hog cholera virus originating from rabbit-modified hog cholera virus of porcine origin and virulent enough to cause death in 12-day-old susceptible test pigs was isolated from the spleens of 6 of 10 fetuses from four litters. Virus was not demonstrable in the spleens of the dams.

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[8]Harvey, M.: Personal communication, July 23, 1954.

Rabies in Scandinavia

Finland has been declared free of rabies as of August, 1954. The disease was diagnosed in 4 dogs and 1 fox between January and April, 1954. In Denmark, as of August, 1953, a barrier was set up along the German frontier by mass immunization with avianized virus vaccine of all dogs in an area 25 to 30 kilometers wide.—*Off. Internat. des Epizoot., Oct. 25, 1954.*

British Rabbits Resist Myxomatosis

Natural resistance to myxomatosis was shown by 3 wild rabbits from a badly infected area in England. Two showed evidence of having recovered but the third had no signs of the disease. No myxomatosis has been reported in domestic rabbits inoculated with Shope's fibroma vaccine nor have there been ill effects from its use. —*All Pets Mag., Jan., 1955.*

Roundup Riders of the Rockies

Three veterinarians hit the trail with Colorado's Roundup Riders of the Rockies again last summer (1954). They were Dr. G. H. Gilbert of Arvada, Colo., Capt. Forrest Button of Colorado Springs, official veterinarians; and Brig. Gen. Wayne Kester, V.C., U.S. Air Force, of Washington, D. C., senior trail horse judge. All three served on the judging committee in selecting the top trail horse on the eight-day timberline trek over 150 miles of Colorado's most colorful and difficult mountain trails. Two other veterinarians, Dr. V. D. Stauffer of Arvada and Col. Harry Gorman, are also members of this nationally known riding group but were unable to attend this year.

Not satisfied with the quality of the horses taking part in the annual trek, the president of the group five years ago established a perpetual trophy to be awarded the best-mounted and best-performing trail rider.

The five veterinarians mentioned organized and have handled the competition since that time. The Riders always have two official veterinarians mounted with the column and in camp who, along with the other judges, have spearheaded a welfare program for the horses. The improvement in both horses and riders, as well as the development of genuine interest in horses (and incidentally veterinary medicine), has been phenomenal.

This year, when the 90 regular riders headed up over the Continental Divide southwest of Estes Park, they had the best trail horses ever assembled for mountain work. The horses were just as good when they finished eight days later—none had been lost or injured, and all were in top shape. When the horses of the wranglers, guides, and staff and the pack animals were included there were at least 110 horses on the trail each day.

As might be expected because of their popularity and increase in numbers in the West, the Quarter horse has become the predominating breed in the group. This year there were 20 purebreds—all good ones. There were also 8 Arabians, a popular and pleasant trail horse, 3 Morgans, 4 Tennessee Walkers, 2 Saddlebreds, 4 Appaloosas, and 5 Thoroughbreds, all good horses. The rest of the animals were also all of good quality mostly showing the blood of the Thoroughbred stemming from the old Army remount stallions that did so much in improving western horses.

Notable is the fact that almost any versatile horse is good on the trail—breed is not important but breeding is. Good conformation, sound, well-placed legs, sloping shoulders, a short strong back that will carry a saddle, a deep middle, straight true easy action, good eyes, intelligence, and alertness have been common characteristics observed in all winners.

The first year (1950) winner was a 1,200-lb., 15.2 hunter-type Thoroughbred; the 1951 winner was a half Saddlebred; 1952, a racing-bred Quarter horse; 1953, a small, 850-lb. Arabian mare; and in 1954, the winner was a Quarter horse gelding of top conformation and a working cow horse as well. Quality, conformation, and intelligence are far more important than pedigrees.

—C. A. Jackson, Denver

Fig. 1—Brig. General Wayne O. Kester, V.C., U. S. Air Force, senior trail horse judge of the 1954 Roundup Riders of the Rockies, on "Snooper" the 1954 winning trail horse.

Agenesis of the Lung.—Agenesis (the congenital absence) of the lung has been recorded 120 times in medical literature. It may vary from no trace of the lung to a fully formed bronchus which ends in a fleshy structure within the mediastinum. It occurred about equally in males and females and on the right or left side.—*Am. J. Surg., Jan., 1955.*

SURGERY & OBSTETRICS
AND PROBLEMS OF BREEDING

Antepubic Urethrostomy for the Relief of Recurrent Urethral Obstruction in the Male Cat

ROBERT M. McCULLY, D.V.M.

Boston, Massachusetts

THE MALE CAT with a urethral obstruction is a problem often encountered in small animal practice. This paper will not discuss the etiology of cystitis but will present a new surgical technique for the prevention and correction of recurrent urethral obstruction.

Urethral obstructions vary considerably in severity. Some cats may have an attack and then live without further obstruction while others have periodic recurrences in spite of prescribed treatment and control of diets and habits. This new approach applies to cats which have had several recurrences of obstructions.

DIAGNOSIS AND PRESENT TREATMENT

Diagnosis of this condition is not difficult. A complete history should be taken to determine the duration of the obstruction. Often a cat is presented for treatment because the owner has observed straining and thinks that the animal is constipated. Sometimes the cat will have been given mineral oil or castor oil. It is easy to determine, by palpation of the abdomen, if the straining is due to a urinary obstruction or constipation. The size and firmness of the bladder are found to vary with the length of time of obstruction, as well as with the amount of fluid taken in by the animal. The bladder may vary from 4 to 7 cm. in diameter depending upon the size of the cat and volume of urine.

Cats that have had obstructions for thirty-six hours or longer are usually prostrate, uremic, and in shock. They are poor surgical risks and the obstruction should be relieved immediately without using an anesthetic if at all possible. If the urethral obstruction can not be safely relieved, the urine can be removed by aspirating it through the abdominal wall with a 25-gauge needle and 20-cc. syringe or other aspirating device. Surgery done twelve to eighteen hours later may then be less hazardous.

The most common and conservative way of handling a urethral obstruction is to relieve the obstruction by water injected through a "tomcat" catheter inserted into the urethra. The sand, or calculus, is thus forced from the urethra into the bladder. This procedure is described by Kirk.[1] When the obstruction is relieved, the bladder is expressed by gentle pressure through the abdominal wall. (It is well to determine the pH of the urine for future reference in prescribing treatment.) The cat is then given 5 per cent dextrose solution subcutaneously at the rate of 5 to 10 cc. per pound of body weight every twelve hours. The bladder should be examined every six hours to determine whether obstruction has recurred.

The pH of the urine is usually about 7, but may often be on the basic side. It should be on the acid side in order to discourage bacteria production and stone formation. When the urine is found to be basic, the cat is given 1½ gr. of chlorethamine,[2]* or 5 gr. of ammonium chloride twice daily. Chlorethamine is ethylenediamine dihydrochloride and releases hydrochloric acid which acidifies the urine. The animal is also given a wide-range antibiotic.

The above procedure is the routine approach to acute urethral obstruction in our clinic, but when the obstruction can not be relieved, or is recurrent, it is necessary to resort to more radical procedures. Some

From the Department of Surgery at the Angell Memorial Animal Hospital, Boston, Mass. Dr. McCully is an intern at the hospital.

[1]Kirk, H.: Index of Treatment, Williams and Wilkins Co., Baltimore, Md. (1951):238.

[2]*Chlorethamine is a trademarked product of Pitman-Moore Co., Indianapolis, Ind.

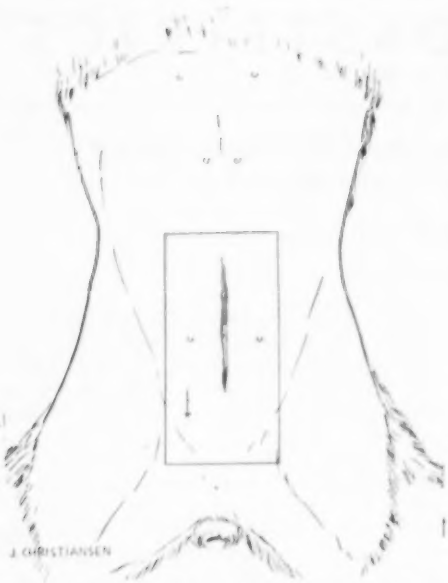

Fig. 1—Operative site for urethrostomy in the cat showing relative position of incision in the abdominal wall.

that have been tried with varying degrees of success have been: amputating the penis; slitting the penile urethra; intubating the urethra with polyethylene tubing via the anterior orifice of the urethra; and urethrostomy at the ischial arch.

ANTEPUBIC URETHROSTOMY

A new approach to the condition provides for a urethral opening transplanted to a new site, thus eliminating the constricting penile urethra. The ideal time to perform this operation is when the animal has recovered from an attack. The next best time is when the cat has an obstruction but is still in good physical condition. Often there is no preoperative care because of the urgency of surgery. If surgery were not urgent, hypodermoclysis with dextrose solution would be indicated preoperatively.

Anesthesia.—The type of anesthetic used depends largely on the condition of the animal and the experience of the surgeon. A combination of atropine, pentothal induction, and endotracheal ether is the safest. Pentobarbital is used only in cases where the cats are considered good anesthetic risks. Epidural anesthesia with demerol as a sedative, and/or with local infiltration of the abdominal wall with procaine (2%) can be used in cases of obstructions of long duration when the patient is uremic or in shock.

Preparation of the Operative Area.—A liberal area on the abdomen is shaved or clipped and prepared according to the desires of the surgeon. The line of incision is along the midline between the pelvic brim toward the umbilicus. The length of the initial incision varies with the distention of the bladder and the amount of fat encountered. Sterile towels and gloves are used, and the usual aseptic precautions are followed throughout the operation.

Instruments and Materials.—Few instruments are required. Those used include a Bard-Parker handle with a hook blade, three small hemostats, a grooved director, scissors, curved needle, and a needle holder. Another instrument needed is an aspirating device, such as a syringe with a hypodermic needle and a two-way valve with a tube attached to the discharge to carry the urine

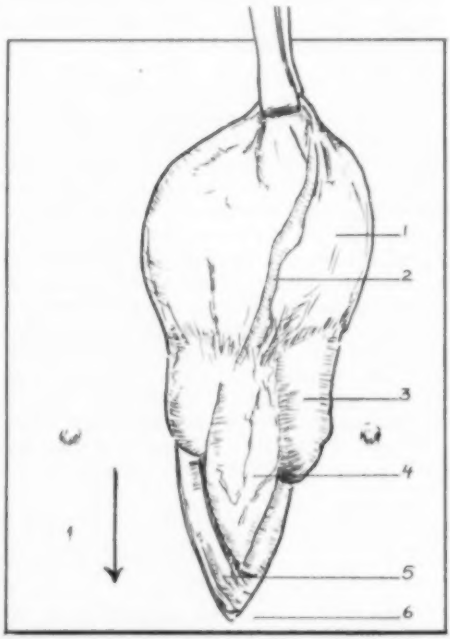

Fig. 2—The empty bladder of the cat brought into the abdominal incision so that its neck can be examined. (1) Urinary bladder, (2) round ligament of bladder, (3) adipose tissue around neck of bladder, (4) periurethral adipose tissue, (5) muscles of abdominal wall, and (6) skin.

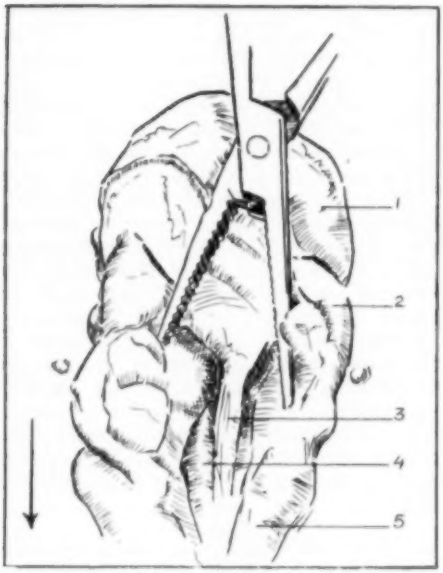

Fig. 3—Mass of fat at the neck of the bladder separated by blunt dissection to reveal the urethra. (1) Urinary bladder, (2) adipose tissue, (3) urethra, (4) adipose tissue containing blood vessels, and (5) periurethral adipose tissue.

away from the operative field. Also needed are a tube of No. 5-0 eye silk, a tube of No. 00 chromic catgut, and a 6-inch length of polyethylene tubing with an inside diameter of 0.075 cm., or a piece of Bard No. 5 catheter 6 inches long.

Surgical Procedure.—An incision is made on the midline about an inch anterior to the brim of the pelvis (fig. 1). When entering the abdomen, care must be taken not to puncture the distended bladder.

Attached to the bladder and the midline is the round ligament containing some vessels. The ligament is thin and can be torn away easily, but should be cut free, not torn, from the abdominal wall. After cutting the ligament from its abdominal attachment, the bladder is emptied by aspirating the urine from the bladder with a syringe or a mechanical-type aspirator. A 25-gauge needle is preferable to a larger needle because of the smaller puncture wound, with less likelihood of postoperative leakage.

When the bladder is empty, it is easily brought into the abdominal incision and its neck is examined (fig. 2). A mass of fat, which encloses the urethra and the neck of the bladder, is separated by blunt dissection, revealing a urethra with a surprisingly large diameter (fig. 3). On either side of the urethra is a vessel which is left intact. Approximately 2 inches of urethra is visible following careful dissection.

After separating the urethra from the surrounding fat and vessels by blunt dissection, two small hemostats are placed side by side at right angles, clamping the urethra as far posteriorly as possible (fig. 4). This point is just anterior to the Cowper's gland where the deferens ducts empty into the urethra. The urethra is cut between the hemostats. This leaves the piece of the urethra still attached to the bladder free to be brought outside the abdominal cavity. The end of the urethra left in the pelvic cavity is ligated with catgut and the hemostat is released (fig. 5).

If the bladder is not already in the abdominal cavity, it is replaced. The neck of the bladder is anchored to the midline by means of a suture through the rectus sheath, muscles, peritoneum, and serosa and muscular coat of the ventral surface of the

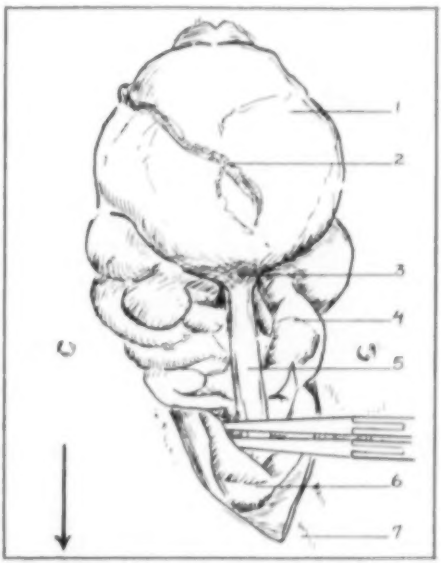

Fig. 4—After the urethra has been separated from the surrounding fat and vessels, two small hemostats are placed side by side at right angles, clamping the urethra as far posteriorly as possible. (1) Urinary bladder, (2) round ligament of bladder, (3) neck of bladder, (4) adipose tissue, (5) urethra, (6) abdominal wall (peritoneum, muscles, fascia), and (7) skin.

neck of the bladder, taking care not to perforate the bladder. The ventral ligament is picked up and sutured, with interrupted sutures, to the abdominal wall to which it was originally attached (fig. 6).

The urethra is now outside the abdominal wall, so the abdominal incision can be closed with simple interrupted sutures of No. 00 chromic catgut. Sutures are placed close to the opening where the urethra emerges, making it snug but not tight. The skin is then sutured. Before entirely closing the initial incision, an opening is made in the skin about ¼ inch posterior to the end of the initial skin incision. The end of the urethra is carried through this opening and the closure of the initial skin incision is then completed (fig. 7).

The urethra, now to be sutured to the skin to form a permanent opening, is slit down the ventral side for approximately ½ inch. A small, oval segment of skin is removed from the abdomen at the place where the urethra emerges to provide a bed for it. The cut edges of the urethra are sutured to the edges of the skin around the "urethral bed" (fig. 8) with No. 5-0 eye silk, using horizontal mattress sutures. This everts the edges slightly so that the urethra will grow to the thin skin.

After suturing the urethra to the skin, a piece of sterile tubing is inserted through the urethra into the bladder (fig. 9), using either a No. 5 or No. 6 Bard male dog catheter or polyethylene tubing with an inside diameter of 0.075 cm. The tubing should extend several inches posterior to the new urethral opening. It is anchored in place by putting a suture in the skin and tying it around the catheter or tube. The tubing insures drainage of urine from the bladder and supports the urethra during the healing process. It is removed in four or five days.

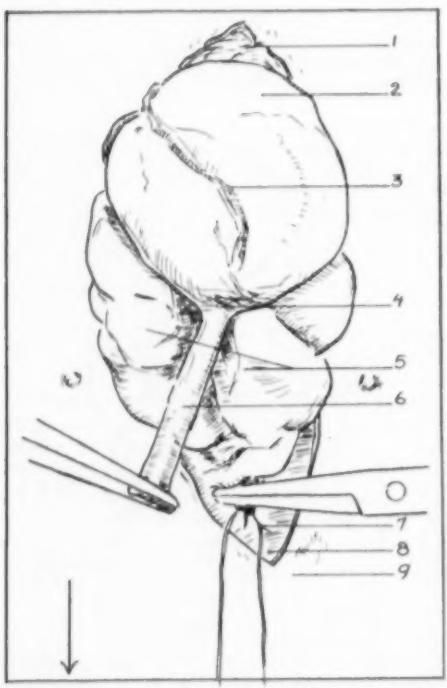

Fig. 5—The end of the urethra left in the pelvic cavity is ligated with catgut and the hemostat is released. (1) Abdominal cavity, (2) urinary bladder, (3) round ligament of bladder, (4) neck of bladder, (5) adipose tissue, (6) urethra, (7) ligature around distal part of urethra, (8) muscular abdominal wall, and (9) skin.

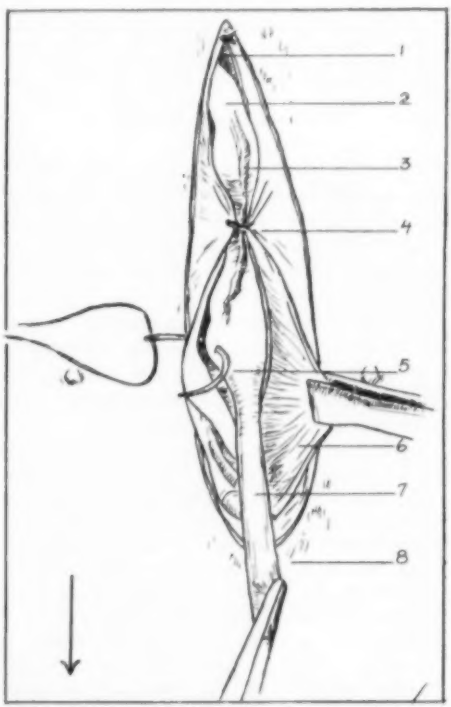

Fig. 6—The ventral ligament is picked up and sutured to the abdominal wall to which it was originally attached. (1) Abdominal cavity, (2) urinary bladder, (3) round ligament of bladder, (4) muscular part and fascia of abdominal wall, (5) neck of bladder, (6) peritoneum, (7) urethra, and (8) skin.

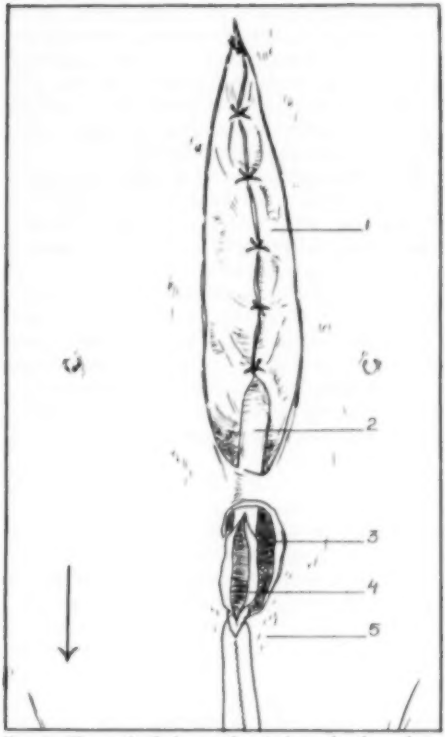

Fig. 7—The end of the urethra is brought through an opening made ¼ inch posterior to the end of the initial skin incision and the closure of the initial skin incision is then completed. (1) Muscular part of abdominal wall sutured, (2) urethra, (3) new opening in skin at site of "urethral bed," (4) end of urethra slit open on ventral side, and (5) skin.

Postoperative Care.—There will be seepage of urine around the catheter. The animal is sponged daily to prevent urine burns. Furacin or vaseline is applied to the wound edges daily to prevent drying and scalding while the wound heals. The tubing should be examined several times daily to be sure that it is not plugged. Aqueous penicillin or other antibiotics can be injected into the bladder through the tubing to keep the lumen open. Healing is usually complete in a week and the silk sutures are removed. Dextrose, 5 per cent solution, is given subcutaneously at the rate of 5 to 10 cc. per pound of body weight every twelve hours until normal intake of food and water is resumed. The animal is also given an antibiotic for the cystitis. Injectable B-complex vitamins are indicated until the appetite returns.

End Results

Upon recovery, the cat has control of urination as soon as the tubing is removed, and there is no dribbling. Urination is controlled by the sphincter muscle at the neck of the bladder. The cat may be confused for a few days when urination occurs, but with time it assumes a crouching position with the back legs spread, much like a male horse when urinating. The stream of urine is strong enough to clear the outside of the opening without dribbling.

The question will arise as to the possibility of the animal getting an ascending infection following this operation. Cats with urinary obstructions usually have a chronic cystitis but the danger of additional ascending infection is slight and, when the original cystitis is under control, no infection

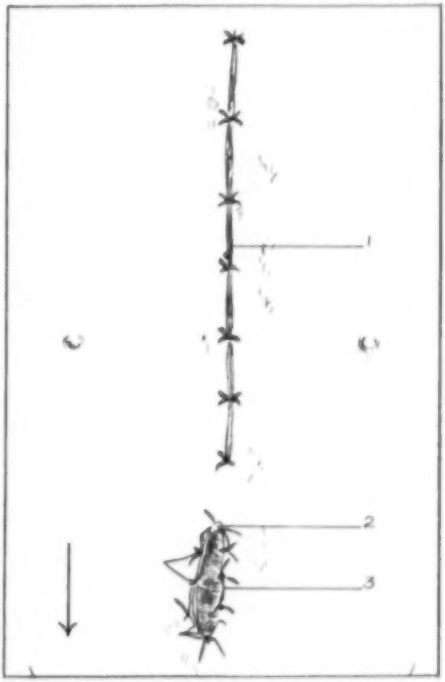

Fig. 8—The cut edges of the urethra are sutured to the edges of the skin around the "urethral bed." (1) Abdominal incision closed, (2) new orifice of urethra, (3) urethra sutured to skin.

is anticipated. Some natural defenses that tend to prevent an ascending bladder infection in a normal urinary tract are: the peristaltic-like action of the urethra following urination, the sphincter muscle valve at the neck of the bladder, and the periodic flushing and dilution of the urethra during urination. It is believed that these natural defenses are preserved in this procedure. There is also a valvelike action at the new urethral opening which tends to prevent ascending infection.

CASE REPORTS

Three case reports of the operation follow:

Case 1.—On March 31, 1954, a 5-year-old tiger tom cat was presented at the Angell Memorial Animal Hospital. The owner thought that the cat was constipated and had given it mineral oil for one and a half days before he brought it to the hospital. A diagnosis of urethral obstruction was made and the owner agreed to the operation. The obstruction was relieved by forcing water into the penile urethra. The cat was given 50 cc. of 5 per cent dextrose solution and started on a chlorethamine tablet every twelve hours. The next day when the obstruction recurred, the operation was performed. Pentobarbital was the anesthetic used.

For twenty-four hours following surgery the cat had an elevated temperature, but its appetite was good during this time and thereafter. The animal was given 5 per cent dextrose, 1/16 Gm. of dihydrostreptomycin, and 100,000 units of penicillin every twelve hours for seventy-two hours.

Since this was the first of these operations performed, the cat was hospitalized for ten days to insure a patent opening upon discharge. Sutures were removed on the ninth day. Upon discharge, a cystitis was still present. Two weeks later when the cat was brought in, the cystitis was still present as evidenced by a small amount of blood in the urine expressed from the bladder. The owner was instructed to give 1½ gr. of chlorethamine twice daily and 50 mg. of oxytetracyline twice daily. There were no further hospital visits.

Case 2.—On May 8, 1954, a 5-year-old castrated male tiger cat was presented at the clinic with the following history: The cat had been castrated when it was young, and had had cystitis for three years, with recurrent urethral obstructions during that time. Upon presentation, the cat's bladder was 3 cm. in diameter, indicating that the obstruction had been present only a short time. The operation was performed, with pentobarbital as the anesthetic.

Following surgery, the animal was given 70 cc. of 5 per cent dextrose solution and 50 mg. of chloramphenicol every twelve hours for seventy-two hours. The following day the animal regained its appetite. It made an uneventful recovery and was discharged ten days after entering the hospital. The cat had complete control over all urinations after surgery. Six weeks later, when it was returned for examination, there were no urine burns or any other objectionable development, and no cystitis was present.

Case 3.—On Aug. 13, 1954, a 4-year-old, gray-and-white castrated male cat was presented at the clinic with the following history: It was castrated when it was 1 year of age; it had its first urethral obstruction on July 14, 1953, at which time it was hospitalized here; the cat was catheterized twice during the two weeks of hospitaliza-

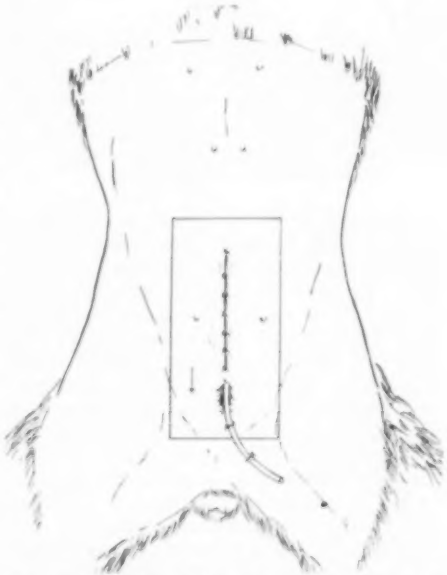

Fig. 9—Polyethylene tubing sutured in place. It insures drainage of urine from the bladder and supports the urethra during the healing process.

tion; there was no further obstruction noticed until approximately eleven months later. At the time of presentation, the cat had not urinated in twenty-four hours and it was constipated. The owner was told of the operation and agreed to surgery. The operation was performed using atropine, pentothal induction, and endotracheal ether anesthesia. A piece of No. 5 Bard catheter, 6 inches long, was inserted in the urethra. It was removed on the fourth day. After the catheter was removed, the animal had perfect control of urinations. It was given 1½ gr. of chlorethamine and 50 mg. of chloramphenicol every twelve hours for seventy-two hours. The cat made an uneventful recovery, the sutures were removed on the sixth day after surgery, and it was discharged one week after entry.

SUMMARY

A surgical procedure for the relief of recurrent urethral obstructions in the male cat is described in detail.

Three case reports are presented.

Lipoma in a Turkey

JOSE B. ARAÑEZ, D.V.M., and
TEODULO M. TOPACIO, Jr., D.V.M.

Quezon City, Philippines

A 2½-year-old female Bronze turkey (fig. 1) was presented for treatment to the ambulatory clinic of the College of Veterinary Medicine, University of the Philippines, Quezon City, in Binan, Laguna, P.I., on Dec. 12, 1953.

The turkey had a large tumor-like enlargement on the right side, close to the vent, which apparently had been present for quite a long time. The turkey was dull; the pulse rate, 82; respiration, 30; and the temperature, 41.2 C. (106.1 F.).

Surgery was immediately performed, after plucking some feathers and disinfecting the operative area with ethyl alcohol. No general anesthetic was used, the tumor being superficially located and the avian sensory nervous system being apparently less highly developed than in mammals. A vertical incision about 2 inches long was made, and the growth was carefully dissected out (fig. 1). The wound was washed with potassium permanganate (1:1,000), the capillary hemorrhage stopped with pledgets of cotton, the incision dusted with sulfanilamide powder, and closed with interrupted sutures of linen. The bird was given 200,000 units of dicrysticin.*

On Jan. 16, 1954, it was returned, with the wound completely healed by first intention and the sutures were removed.

The growth was yellowish red, with some adipose tissue covering it. It measured 1½ inches in diameter and weighed 11.4 Gm. The surface was irregularly spherical, hard

Fig. 1—A female Bronze turkey showing the lipoma and the wound before suturing.

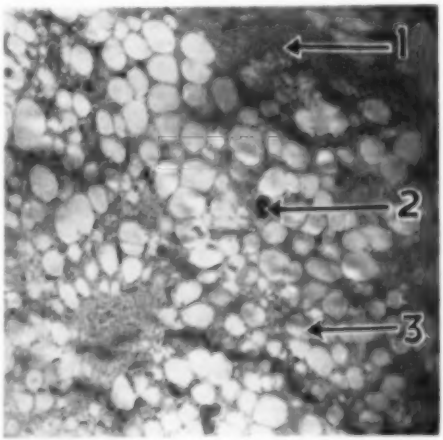

Fig. 2—Photomicrograph of the outer portion of the tumor (hematoxylin and eosin): (1) fibrous connective tissue; (2) blood vessel; (3) fat cell. x 100.

Dr. Arañez is in charge of the large animal and ambulatory clinics in the College of Veterinary Medicine, University of the Philippines, Quezon City; Dr. Topacio is instructor in the Department of Veterinary Pathology and Bacteriology in the same college.

*Dicrysticin is a product of E. R. Squibb and Sons, New York.

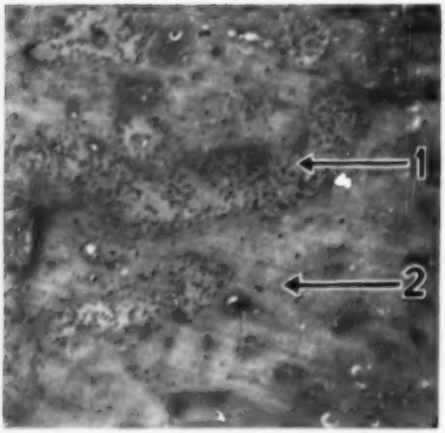

Fig. 3—Photomicrograph of the core of the tumor (hematoxylin and eosin): (1) immature fat cells; (2) ground substance. x 430.

and firm, and traversed at its base by fine blood vessels. The center of the growth presented a yellowish, fine substance resembling yolk. Microscopic examination revealed that it was lipoma. The outer part of the tumor was composed of fat cells (fig. 2), with interspersed fibrous connective tissues. The core of the neoplastic growth revealed a different picture, with small dark-staining cells, apparently fat cells of the immature type, on a clear eosin-staining ground substance (fig. 3).

Feeder Approves of Cooked Garbage

A feeder, whose hogs had vesicular exanthema in May, 1953, now states that because of less disease, better gains, and more healthy, vigorous pigs "we would not go back to feeding raw garbage even if the law requiring cooking was repealed." He averages 1,500 hogs on feed. They are purchased when weighing 140 to 160 lb., immediately vaccinated with hog cholera virus and serum, isolated on an oat ration for twenty-one days, then fed nothing but cooked garbage for seventy days, and are marketed to serum producers at weights of 260 to 280 lb.

The garbage is more palatable when cooked, the hogs relishing such things as grapefruit rinds and chicken bones which they previously left. Two trucks are equipped for cooking with steam provided by a boiler. Two and one-half hours is required to cook a load in the summer, plus an additional hour in the winter. After boiling thirty minutes, the garbage is allowed to cool in the truck before being fed. —*Kansas Stockman, Jan., 1955.*

Pulmonary Lobectomy in a Dog

WILLIAM V. LUMB, D.V.M., M.S.; WILLIAM D. CARLSON, D.V.M.; STUART A. PATTERSON, M.D.

Fort Collins, Colorado

It has been noted by both Blakely[1] and Guard[2] that indications for removal of lung lobes in the dog are rare. Primary lung tumors seldom develop in this species[3] and secondary tumors, when detected, usually have passed the point where treatment is feasible. A review of the available literature reveals one reference, by Schnelle,[4] to lobectomy for primary lung tumor in a dog. His case is described, however, only from the radiographic standpoint. For this reason, the removal of a metastatic adenocarcinoma in the lung of a dog is reported.

On Aug. 18, 1953, an 8-year-old female Scottish Terrier was referred to the clinic at the Colorado A. & M. College because of a breast tumor which the owner had first noticed about two months previously. The tumor, in the right inguinal mammary gland, had appeared to grow rapidly and on entry measured approximately 1.8 by 3.0 by 14.0 cm. Excision was performed and recovery was uneventful.

Grossly the tumor was a lobulated, encapsulated, gray-white, fibrous mass containing foci of necrosis. Histopathological examination revealed an adenocarcinoma with abundant evidence of malignancy.

On March 22, 1954, the patient was returned to the clinic with a large swelling at the base of the left ear and enlargement of the prescapular lymph nodes. The owner was concerned because of the possibility of metastasis of the original tumor. A diagnosis of abscess was made and, following two periods of hospitalization, an apparent recovery ensued.

On April 7 the patient was returned because of an asthmatic cough which oc-

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The authors are indebted to Dr. Rue Jensen, Department of Pathology and Bacteriology, for the photomicrograph and examination of the primary and secondary neoplasms.

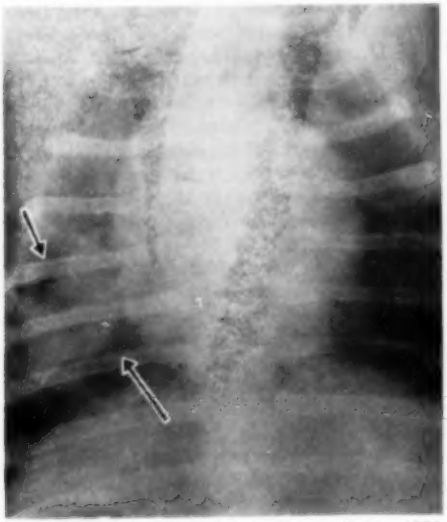

Fig. 1—Radiograph of dog made April 21, 1954, showing increased density (arrows) of the left lung lateral to the heart.

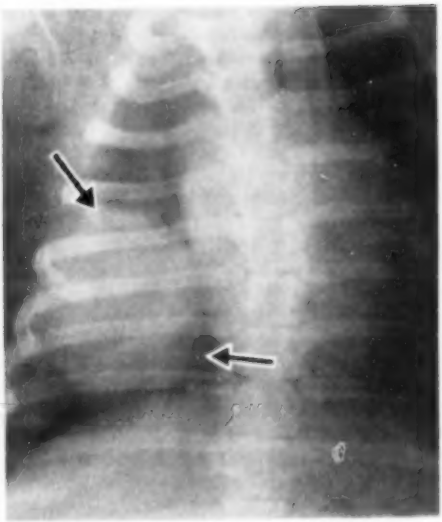

Fig. 2—Radiograph made Aug. 6, 1954. Note increase in size and density of the tumor (arrows) with displacement of the heart.

curred several times a day. Paroxysms of coughing were so violent that the dog collapsed and gasped for breath during these seizures. On physical examination, the general condition of the animal was good and her temperature normal. Hospitalization was advised for further observation.

Radiographs of the chest revealed an increased prominence of the bronchovascular markings, primarily on the left side, and a poorly defined, rather homogeneous, density in the posterior portion of the left lung field. A tentative diagnosis of cardiac asthma was made although the possibility of a metastatic tumor was not ruled out because of the previous history. After digitalization, combined penicillin-streptomycin therapy was instituted. The coughing gradually diminished over a twelve-day period. More radiographs were made on April 21 and an increased density was still visible in the left lung just lateral to the heart (fig. 1). Due to clinical improvement of the patient, she was sent home and the owner told to return for further radiographs in a month.

On August 6, a radiograph was made and revealed an increase in size of the previously noted homogeneous density in the region of the diaphragmatic lobe of the left lung (fig. 2). The density now showed clearly defined margins and the heart was displaced to the right. The owner was warned that the dog had a lung tumor and lobectomy was advised.

Fig. 3—Radiograph of dog made nine days postoperatively. The left diaphragmatic lobe shows good aeration; the left sixth rib has been partially resected (arrow).

On August 17, the dog was returned to the clinic for the operation. Food and water

were withheld for twelve hours and 1/150 gr. of atropine was administered preoperatively. The left neck, leg, chest, and flank were clipped. Surital sodium was given intravenously to produce anesthesia, following which a trachea tube with inflatable cuff was inserted. Anesthesia was maintained throughout the operation with ether administered by means of a gas machine. A continuous slow intravenous drip of Ringer's solution was started in order to maintain immediate access to a vein in case parenteral medication was needed.

Following preparation of the operative site, towels and a drape were laid. An incision was made through the skin and subcutaneous tissue over the sixth rib from 2 inches lateral to the vertebral spines ventrally to within about an inch of the sternum. The lateral thoracic muscles were incised, bleeders ligated with 00 catgut, and the sixth rib exposed. The periosteum was incised longitudinally from the dorsal aspect of the incision to the costochondral junction and raised with a periosteal elevator. A subperiosteal resection of the rib was then performed, a portion of the chondral cartilage being removed also.

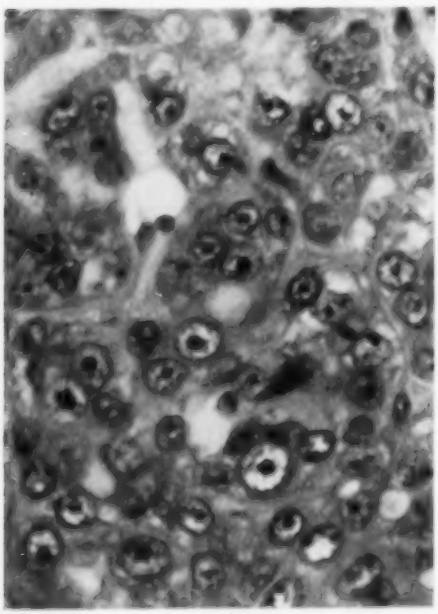

Fig. 4—Photomicrograph of the primary tumor, an adenocarcinoma of the right inguinal mammary gland (hematoxylin and eosin stain). x 600.

The periosteum and pleura were incised, opening the pleural sac. The tumor was immediately visible through the incision. On examination, it was found to involve the cardiac lobe of the lung rather than the diaphragmatic lobe as was previously supposed. It was firm, semispherical, dark red, and did not appear to have penetrated the pleural covering of the lobe. It measured approximately 4.5 by 6.0 by 6.0 cm. The diaphragmatic lobe was atelectatic to a considerable degree due to pressure from the tumor.

Saline-soaked towels were placed over the edges of the incision and the adjacent ribs were spread with a Reinhoff retractor. Further examination revealed the apical and cardiac lobes to be so fused that it was considered advisable to remove both rather than attempt removal of the cardiac lobe alone. The pulmonary vessels at the base of the lobes were separated from the surrounding tissues by blunt dissection. As each vessel was separated, it was doubly ligated, the distal ligation being a fixation ligature. After all vessels had been severed distal to the ligatures, a Satinsky clamp was applied to the bronchus and it was severed and ligated in the manner described by Sweet.[5] This method involves ligating and cutting by steps so that anesthetic gases and bronchial secretions are not allowed to escape into the pleural cavity. No tissue was readily available to cover the bronchial stump, so this was not done. No plombage was used.

Following removal of the retractor and towels, three interrupted sutures of No. 2 catgut were placed around the adjacent ribs. The incision was closed by locking Backhaus towel forceps around these ribs and the sutures tied. The overlying muscles were closed in layers using continuous sutures of No. 00 catgut. The point of a blunt teat cannula was inserted through the incision into the pleural cavity and, following closure of the muscle layers, the lungs were expanded to their full extent. The teat cannula was then removed, thus establishing negative intrathoracic pressure. The subcutaneous tissue and skin were each closed with continuous sutures of No. 00 catgut.

The operation appeared to be well tolerated until the anesthesia lightened postoperatively. At this time, the patient's mucous membranes became progressively

more pale and slightly cyanotic. The trachea tube, which had been left in position, was reconnected to the gas machine and pure oxygen administered. A transfusion of 250 cc. of whole blood was given and the patient's color began to improve immediately. Within an hour, she was groggy but able to hold up her head.

Postoperative care consisted of daily injections of penicillin, along with streptomycin injections three times a day, for seven days. Digitalis therapy was continued throughout the postoperative period along with daily injections of vitamin B complex. Radiographs made on the ninth postoperative day indicated there was good aeration of the left diaphragmatic lobe (fig. 3).

Examination of the tumor in the lung lobe revealed it to be a metastasis from the neoplasm of the mammary gland. The histopathology was similar to the primary focus (fig. 4).

On Oct. 5, 1954, the dog was returned for routine examination. She appeared healthy in all respects and had gained weight. Radiographs showed no evidence of tumor recurrence and the lung fields and pleural cavities were clear.

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Quality and Quantity of Boar Semen

Twenty ejaculates were collected from the same boar at weekly intervals, the volume varying from 240 to 500 ml. (1 pint). Fractional collection revealed no sperm or seminal vesicle secretion in the earliest or "pre-sperm" fraction; quantities of substances from the seminal vesicles in the next or "sperm-rich" fraction; and mainly accessory gland secretions in the last or "post-sperm" fraction.—*Vet. Bull., Dec., 1954.*

Daisy, a 10-year-old matron with Brown Swiss, Holstein-Friesian, Shorthorn, and Jersey ancestry, is shown with a friend and her sixth consecutive set of twin calves delivered Dec. 2, 1954, by Dr. C. M. Hibbs (MO '53) of David City, Neb. Both calves, one of each sex, were breech presentations. The six sets of twins were both heifers three times, both bulls once, and a heifer and a bull twice. Has Daisy made a new record?

A Forceps for the Removal of Foreign Bodies from the Upper Digestive Tract

J. ANTELYES, D.V.M.

Middle Village, New York

ABOUT SEVEN YEARS ago, in cooperation with a skilled instrument maker,* the author designed and developed a forceps for the removal of foreign bodies from the upper digestive tract. This was done in an effort to eliminate certain disadvantages which existed in other available instruments.

No claim is made for originality or inventiveness, since the forceps represent only a new application of well-known principles.

The degree of success, astonishing even to the makers, is indicated by the fact that with it we have never failed in an attempt to remove a foreign object from the upper digestive tract, nor has a patient ever been lost through such a procedure.

DESCRIPTION

The forceps (fig. 1) consists essentially of: (1) a stainless steel tube ¼ inch in diameter with finger rings attached, and (2) a threaded steel rod which passes through the center of the tube with a handle on one end and a pair of blunt serrated jaws on the other. The over-all length is 23 inches, sufficient for the complete exploration of the stomach of a 45- to 50-lb. dog.

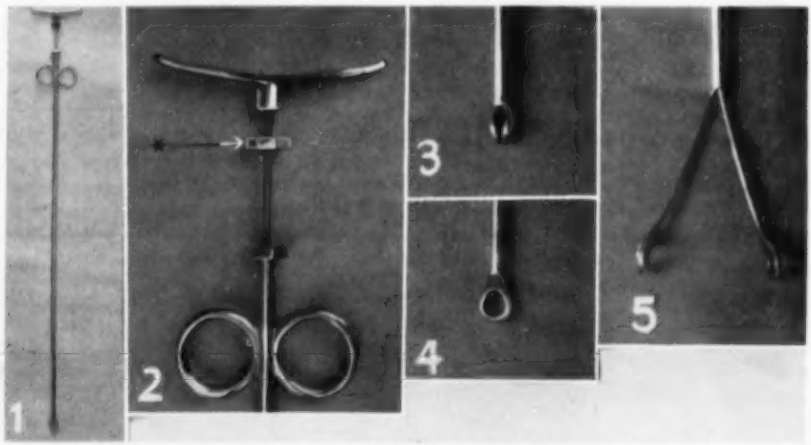

Fig. 1—Forceps designed to remove foreign bodies from the upper digestive tract.
Fig. 2—Handle, locking nut (arrow), and rings of the forceps.
Fig. 3 and 4—Side and front views of the forceps with the jaws closed.
Fig. 5—Jaws of the forceps open and extended.

The handle rotates freely on the rod (fig. 2). As it is depressed against tension of a spring within the tube, the jaws open as they move forward. When the pressure is released, the spring causes the handle to slide back to its original position while the jaws simultaneously move backward and close (fig. 3, 4, and 5).

The jaws have a spreading or flanking motion rather than just an opening and closing movement. This enables the operator to cause the jaws to reach out, grasp the object, and retract in one action of the instrument.

This flanking movement also has the effect of pushing aside the adjacent gastric

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*Mr. George Barth, Metro Surgical Specialty Co., Inc., Mamaroneck, N. Y.

wall so as to allow the foreign body to fall easily into the open jaws.

After the object has been grasped, a locking nut (fig. 2) is tightened, causing the jaws to maintain a rigid, firm grip. This maintains the grasp on the object, even though it may be slippery or of unusual size or shape, and it allows the operator the use of both hands in carefully guiding the instrument and object out through the esophagus.

The gastric mucosa has never been injured, either in a patient where the utmost care was taken, or in an experimental animal where deliberate attempts to traumatize were made.

DIAGNOSIS

Any good text on the practice of medicine discusses this subject. In brief, a differential diagnosis of a foreign body in the upper digestive tract is made on the history, symptoms, and radiography, rather than by direct palpation which is not usually possible. Owners often state that their dog is the type which eats odd things. This, with hypogastric sensitivity, always indicates the possibility of an inflammation caused by a foreign object.

Frequently, a few seconds of fluoroscopy will reveal metallic or calcareous bodies in the stomach. The search for radiolucent or radiotransparent objects, such as rubber, wood, fabrics, and plastic, requires more time and effort.

ANESTHESIA

Usually an intravenous, short-acting, general anesthetic is used so the patient may be up in less than an hour and may be discharged the same day. Anesthesia of long duration is employed, however, in cases where lengthy exploration is expected, such as in a stomach full of small, irregular objects (pebbles, jacks, etc.) or a single object which may not be easy to recover (dead bird, penetrating pin, etc.).

PROCEDURE

Passing this instrument is accomplished with ease. Our method includes the following steps: (1) With the operator standing dorsally to the dog, which is lying on its right side, the patient's tongue and lower jaw are grasped in the left hand. (2) The head and neck

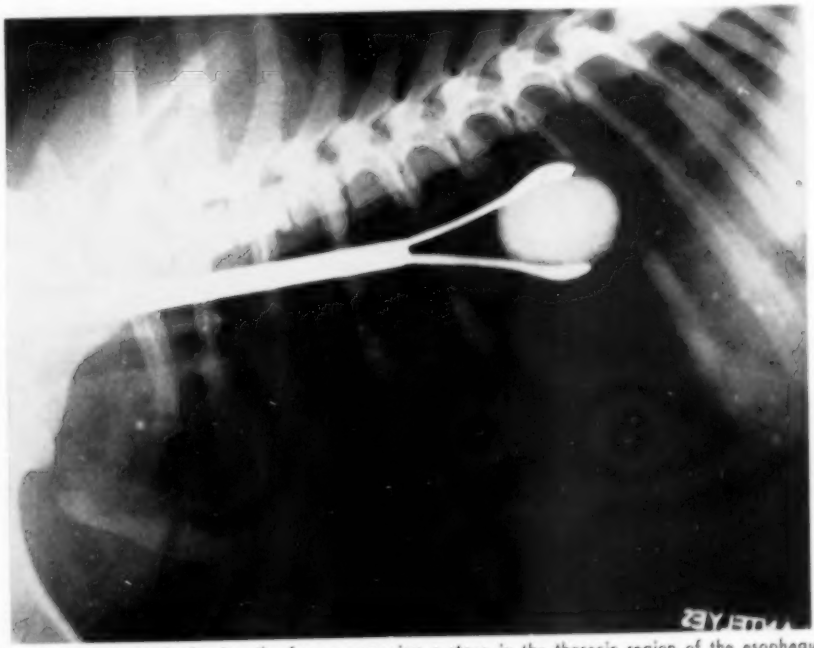

Fig. 6—A radiograph showing the forceps grasping a stone in the thoracic region of the esophagus of a dog.

are extended in order to straighten the esophagus. (3) The base of the tongue is depressed with the tip of the forceps and the instrument is then slowly directed into the esophagus. No force is required. If resistance is encountered, the instrument should be carefully rotated on its long axis until passage is easily made. Instead of lubrication, warm water is allowed to run on the instrument for a few minutes prior to use. (4) The fluoroscope, although not an absolute necessity, facilitates the removal of the foreign body. With the forceps in the stomach, the patient is fluoroscoped laterally and ventrally to establish the position of the object and to aid in directing the open jaws of the instrument quickly to it. The jaws are then allowed to close on the object, the locking nut is tightened, and the object is withdrawn. It may be necessary to rotate the instrument somewhat for easy removal. (5) Without the fluoroscope, blind search of the gastric interior may be accomplished with the instrument jaws open. They are allowed to close from time to time and, if closure is incomplete, an object has been grasped. The type of jaw assembly assures the operator that the patient's stomach lining will not be pinched during this procedure.

TYPICAL CASE REPORTS

Case 1.—A 3-year-old, male, Spitz-type dog had a history of inanition, dullness, lassitude, frequent black, tarry vomitus, dehydration, and progressive weakness for four days. His temperature was 100 F. and he appeared to be toxic. The abdomen was tense and hypogastric pain was evident. Since he was a "roamer," there was a possibility of poisoning or of a foreign body in the upper digestive tract. Fluoroscopy revealed a large amorphous mass in the stomach. Under light pentothal anesthesia, the forceps was passed and a piece of macerated animal skin withdrawn. It took seven or eight separate passages of the instrument (and additional anesthetic) to remove the entire mass which proved to be the highly odorous, decomposed body of a good-sized rat. With the aid of supportive treatment, the patient soon recovered.

Case 2.—A male, Spaniel-type dog had swallowed a stone. After an emetic failed to remove it, the patient was anesthetized and the stone was easily removed. The radiograph (fig. 6) shows the forceps and stone in the thoracic esophagus during the process of withdrawal.

Case 3.—An adult, altered, male cat was brought in because of a sudden paroxysmal retching and a noticeable pain and edema in the ventral portion of the neck. Instead of the anticipated needle, the fluoroscope revealed a vague, unrecognizable shadow in the midcervical esophagus. An intentionally underexposed radiograph (fig. 7) clearly showed the offending foreign body—a fish vertebra.

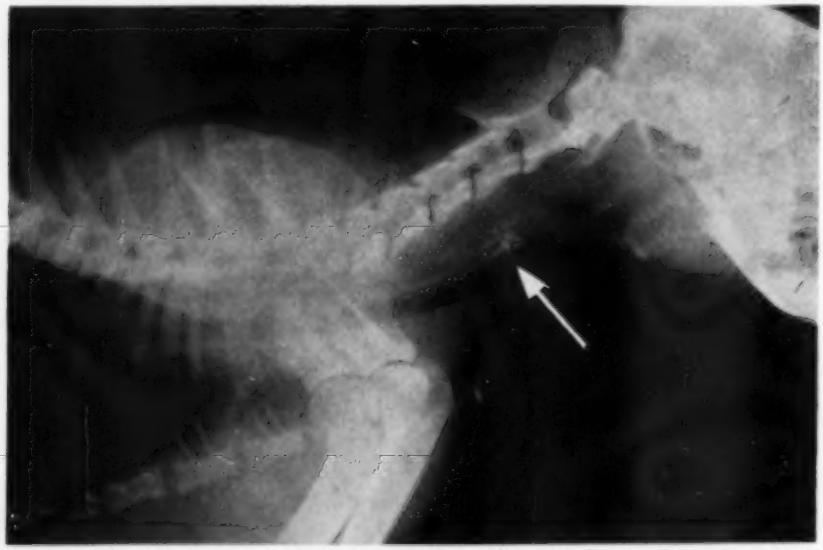

Fig. 7—A radiograph showing the shadow from fish bottes (arrow) lodged in the esophagus in the midcervical region of a cat.

In this case, the instrument was slowly passed into the esophagus until the obstruction was reached. Then the jaws were carefully opened in order to disengage the vertebral spines from the inflamed mucosa. After some difficulty, the object was freed from the esophageal wall, encircled by the instrument jaws, and gently withdrawn. After two distressing days, the patient began to eat and then recovered uneventfully.

DISCUSSION

The instrument is cleaned easily with hot water and soap or a detergent. Absolute sterility is not considered necessary.

The instrument has also been successfully used as a probang. It is a time-saver, one foreign body having been removed from the upper digestive tract in less than thirty seconds. The average time, however, including anesthesia induction, is about ten minutes.

Use of Cortisone in Bulls

G. A. PIPER, D.V.M.

Viroqua, Wisconsin

A local artificial breeders' cooperative is troubled with crampyness in the sires. This impairs breeding efficiency due to pain and inability to mount. Several bulls have been treated with cortisone for this condition with good results.

One bull, a Holstein-Friesian, 10 years old, had been "crampy" and arthritic for several years. His joints showed osteoarthritic changes. They were inflamed and swollen, in August of 1953, and the bull was having difficulty in rising and moving although his semen was normal. On August 24, treatment was initiated in the form of 500 mg. of cortisone acetate (Upjohn) daily. After five days, the dosage was gradually decreased 25 mg. daily for five days. The dosage was then reduced 50 to 75 mg. daily for another seven days, the last dose being 25 mg., and then the drug was discontinued, about 6,000 mg. having been given. The bull showed marked improvement and was able to move more easily. After about thirty days, the bull began to fail rapidly. The manager was persuaded not to market him but to allow another course of treatment. The bull then was given 100 mg. of cortisone each day for twelve days and showed immediate improvement. After a ten-day rest, 100 mg. of cortisone was given daily for four days, followed by 100 mg. every other day for twenty days. After this, the bull was maintained on 125 mg. twice a week for a month. In this eleven-week period he received 3,600 mg. of cortisone.

The many changes in dosage were made because of experimenting to determine the least amount of cortisone that would maintain the animal which weighs about 2,500 lb. He now gets 50 mg. every other day, is in good condition, and his semen is good.

The second bull was a Guernsey, so "crampy" that he would not move to get feed although he ate very well if the feed was placed in front of him. For eleven days, he was given 250 mg. of cortisone acetate per day and improved a great deal. The dosage was then reduced to 125 mg. daily for five days then, after a ten-day rest, he was maintained on 125 mg. twice per week. He was very active on this dosage, eating and moving around without pain. However, his fertility was not satisfactory so he was sent to market. This bull showed a good response to the medication. In thirty days, he received 3,625 mg. of the drug.

The use of cortisone acetate in bulls for arthritis and crampyness apparently is indicated. The lower dosage seems to maintain the animals very well. A dosage of 125 mg. every other day for about ten days and then 125 mg. twice per week is sufficient. The drug then should be discontinued or continued at lower levels, depending on the need of the animal.

Cortisone has been used on other stud animals with good results in relieving arthritis and crampyness and the fertility has not been impaired. Some improved on as low as 50 mg. of the drug every other day for one to four weeks. Treatment was then discontinued but was resumed if the bull again showed signs of becoming crampy. Although not a cure, this therapy will keep the older, more valuable, bulls in service.

Dr. Piper is a general practitioner in Viroqua, Wis.

Trichomonas Foetus in Semen.—*Trichomonas foetus* can be eliminated from infected semen if it is stored overnight at 5 C. in 20 per cent glycerol or, preferably, if frozen to —79 C. in the presence of 10 per cent glycerol.—*Vet. Rec., Nov. 20, 1954.*

Cystinuria in the Dog

S. POLLOCK, D.V.M.

South Orange, New Jersey

MEDICAL LITERATURE describes cystinuria as a rare disturbance of the intermediary metabolism of protein which results in the passage of cystine in the urine, or the formation anywhere in the genitourinary tract of calculi composed of pure cystine crystals.[1]

Cystine is a sulfur-containing amino acid present in sulfuric foods which, in normal metabolism, is oxidized principally to sulfate with a smaller amount converted to taurine. In the patient with cystinuria, however, there is failure of intermediary enzyme oxidation of cystine into sulfate, and cystine is excreted in the urine in amounts as high as 1 Gm. per liter of urine in twenty-four hours. Normal urine contains only a few milligrams (0.8 to 80.0 mg.) of cystine per liter.

This incurable metabolic defect was recognized by Wollaston[1] over a hundred years ago but has escaped widespread attention of the medical profession because of the rarity of cystine lithiasis and the accompanying clinical manifestations. Many of those affected pass through life without knowledge of their metabolic abnormality.

The biochemistry of cystine metabolism is confusing, but investigations indicate that the amount of cystine excreted by a cystinuric patient is proportional to the protein intake. Cystinuria can not be eliminated completely as small amounts will continue to be excreted even in a state of starvation. Difficult to understand is the fact that the level of cystine excretion by a cystinuric individual is not increased by ingestion of cystine itself, but is increased by protein rich in sulfur.[2]

A definite hereditary tendency toward cystinuria has been established by numerous investigators. Inasmuch as this tendency is transmitted as a mendelian recessive, it is unusual for all members of a family to show cystinuria, and of those who do show positive cystine urine tests, only a few develop stones. The diagnosis of cystinuria is established by simple laboratory procedures.[3] Cystine crystals are colorless, highly refractive, rather thick hexagonal plates with well-defined edges. They lie either singly or in more or less irregular clusters. Cystine is soluble in hydrochloric acid but insoluble in acetic acid. It is readily soluble in ammonia and is recrystallized upon addition of acetic acid. The diagnosis may also be confirmed by the qualitative cyanide-nitro-prusside test.

As to treatment, Crowell[4] first demonstrated disintegration of cystine stones in man by alkalinization of the urine to provide a continuous alkaline lavage of the renal pelves. Alkalinization of the urine can be best maintained by the administration of sodium bicarbonate or potassium citrate in 1- to 2-Gm. doses four time daily. An alkaline-ash diet low in sulfur protein is also valuable in maintaining normal urine as well as in diminishing the concentration of cystine urinary output per unit volume.

In his excellent paper "Urinary Calculi in the Dog," White[5,11,12] gives credit to Joest (1924)[6] as the first to mention cystine stones in the kidney and bladder of dogs. A new impetus was given to the study of cystinuria in the dog by the description of a cystine stone in an Irish Terrier by Morris *et al.*[7] in 1935. Hess and Sullivan[8] in 1942 confirmed the observations of earlier workers that feeding cystine had no effect on the amount of cystine excreted in the urine. Blamey and Brand (1939)[9] recorded the occurrence of cystinuria in 2 Scottish Terriers, 1 of which had small vesical cystine stones. Sjöberg and Nilsson (1940)[10] described multiple small urethral stones which contained 91 per cent cystine in an Irish Terrier. All the animals with cystine stones or with cystinuria were males. White reports that of 31 cases of urethral calculi, all in male dogs, 19 were composed mainly of cystine, which also was the main constituent of vesical stones in 2 cases. He concludes that cystine calculi are much more common in dogs than was formerly believed. He further rationalizes the rare recognition of these stones with the explanation that practitioners seldom submit the smaller stones for chemical analysis.

CASE REPORT

The following case illustrates the remarkable similarity of cystinuria in the dog with that described in medical literature. The patient, a red male Dachshund, was 1 of a litter of 6 born April 24, 1952. At 10 weeks of age, when it was immunized against distemper and infectious hepatitis, a routine stool examination revealed the presence of coccidiosis. When a year old, it was returned to the hospital because of hematuria during the terminal phase of micturition. The pup exhibited a slightly

Dr. Pollock is a small animal practitioner in South Orange, N. J.

Fig. 1—Inflated bladder of Dachshund showing catheter and calculi (arrow).

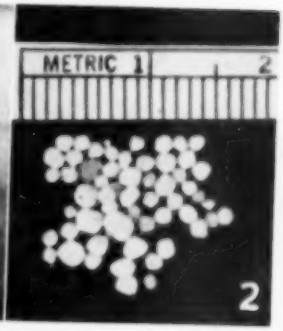

Fig. 2—Calculi recovered from Dachshund by cystotomy.

Fig. 3—Bladder inflated, six months after cystotomy, showing more calculi (arrow) than preoperatively (fig. 1.)

enlarged prostate which was believed to have caused the trouble. Accordingly, stilbestrol therapy was administered with apparently satisfactory results. The patient was again seen Feb. 1, 1954, when it had hematuria accompanied by stranguria, apathy, anorexia, and abdominal tenderness, especially over the prepubic region. Urinalysis revealed the presence of microscopic quantities of blood with a few pus cells. Radiographic studies of the air-inflated bladder showed many small calculi (fig. 1). Upon cystotomy on February 11, many stones were removed (fig. 2). The patient recovered and for six months experienced no difficulties on urination.

On August 3, the patient was returned with a history of again passing stones, some of which the owner presented. Radiographic studies embraced the bladder-inflation technique as well as an intravenous pyelogram series using diodrast (30 cc.) intravenously, with exposures at five, fifteen, and sixty minutes. The calculi revealed were much larger than those removed six months previously. The pyelogram series failed to reveal calculi in the pelves or ureters, but showed stones present in the bladder and urethra (fig. 3 and 4).

Fig. 4—Fifteen-minute pyelogram outlining normal kidneys (K) and showing calculi in bladder (B) and urethra (U).

Immediate surgical intervention was deemed advisable in view of the stranguria and the difficulty in catheterization. Since an abdominal approach would accomplish no more than it did six months previously, it

Fig. 5—Calculi (50) eliminated through fistula of urethra.

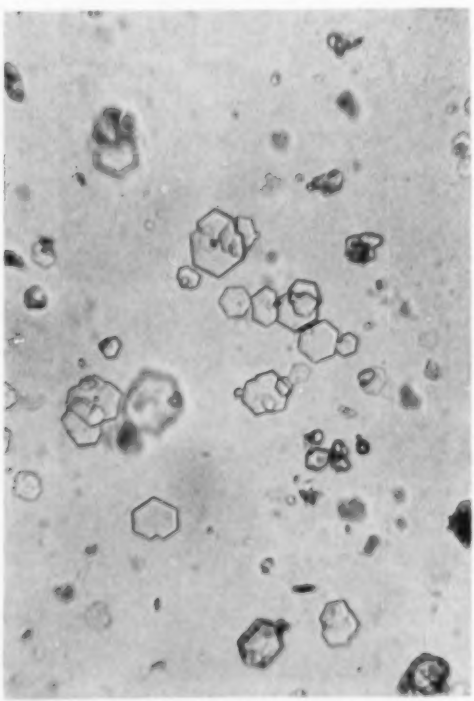

Fig. 6—Cystine crystals in centrifuged specimen of urine. x 260.

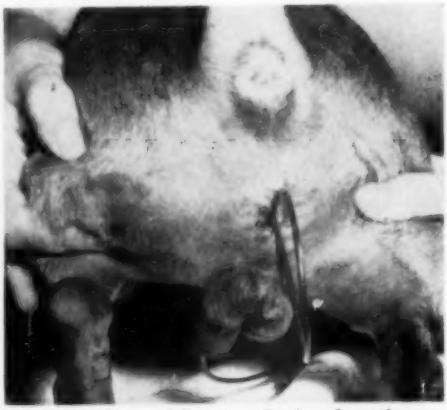

Fig. 7—Catheter delineating fistula of urethra on tenth postoperative day.

was decided to fistulize an opening in the urethra below the ischial arch to permit passage of fair-sized calculi. This was readily accomplished by suturing the incised urethra directly to the skin with cotton sutures. Several calculi, some measuring 3 to 6 mm. in diameter, were removed through this incision, and during the first postoperative week 50 calculi were passed (fig. 5).

Postoperative care included the use of antibiotics (combiotic®), a sedative (demerol®), and a smooth-muscle relaxant (depropanex). A definite diagnosis was

Fig. 8—Orifice of urethral fistula in relation to anus and scrotum.

now made by the recognition of the typical hexagonal cystine crystals in a centrifuged specimen of urine (fig. 6). The urinalysis report was: slightly cloudy, yellow, alkaline; specific gravity, 1.035; albumin, 3 plus; sugar, negative. Microscopic examination revealed a heavy deposit of cystine crystals, a small number of triple phosphate crystals, a few red blood cells, and a few pus cells. A strongly positive reaction to the cyanide-nitroprusside test of Brand, Harris, and Biloon[7] was shown when 5 cc. of sodium cyanide (5%) was added to 5 cc. of urine and allowed to stand five minutes at room temperature. Then when 3 or 4 drops of a freshly prepared sodium-nitro-prusside (5%) solution was added, a brilliant purple color indicated the presence of cystine. This was further confirmed when the Clinical Laboratory (Newark, N. J.), after analysis of submitted calculi, reported the "calculi consisting chiefly of cystine with some uric acid and calcium phosphate."

The next step was to learn whether a recessive mendelian cystinuric trait exists in animals. Accordingly, a search was made for the litter mates of this dog. Of the original 6, 1 had died in a snowstorm, another from traumatic injuries, but 2 were available. The urine of 1 male was strongly positive to the cyanide-nitroprusside test, and a microscopic examination of the concentrated sediment showed an occasional cystine crystal. The urine of the other likewise gave a position reaction to the cyanide-nitro-prusside test.

Three months after the fistula operation, the dog was symptom-free and normal (fig. 7, 8) even to the extent of raising his leg during urination. Alkalinization of his urine with sodium bicarbonate, 10 gr. twice daily, has suppressed calculi formation. Subsequent examinations will be conducted periodically on both the patient and his brother.

SUMMARY

1) Cystinuria in medical literature is a rare condition resulting from an incurable metabolic defect.

2) Cystinuria in the dog satisfies all the criteria tabulated in man.

3) Chemical and microscopic examination of calculi indicate that cystinuria is more prevalent in dogs than was formerly believed.

4) A case study embracing all the criteria of previous workers is described.

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[12]White, E. G.: Personal communication.

Effect of Fatty Acids on Rumen Action

When sodium acetate, propionate, or butyrate was injected intravenously into sheep at the rate of 100 mg. per kilogram, ruminal action was immediately inhibited but gradually returned to normal, then was followed by a secondary inhibition especially marked when sodium acetate had been given. This indicates that the rumen is controlled by humoral means as well as by nervous stimuli. The initial inhibition is easily accounted for but the secondary inhibition is not. It probably resulted from metabolic derivatives of the substance.—*Vet. Bull., Dec., 1954.*

Mammalian Sex Reversal.—Using the opossum, since the embryos are accessible in the mother's brood pouch, the primary sex organs of male embryos were reversed by the injection of sex hormones.—*Sci. News Letter, Dec. 18, 1954.*

CLINICAL DATA

Enterotoxemia (Sudden Death) in Calves Due to *Clostridium Welchii*

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IN 1947, a disease of calves was described under the title "Sudden Death in Calves Associated with Myocardial Degeneration."[1] There is now no doubt in the mind of the writer that we were describing, as aspects of one disease, two distinct disease entities. One of the diseases had just been described by Vawter and Records[2] as "Muscular Dystrophy (White Muscle Disease) in Young Calves." At that time, we had not recognized muscular dystrophy in the calf showing myocardial degeneration. Since then, we have seen several such cases although the great majority show degeneration of the skeletal muscles, with little, if any, visible myocardial degeneration. The second disease entity was included, since it was associated with sudden death in calves of a similar age group and with a similar case history and cardiac fibrillation. Sudden death due to the toxin of *Clostridium welchii* is a definite disease entity and unrelated to sudden cardiac failure sometimes seen in muscular dystrophy.

SYMPTOMS

There is little to add to the description already given in the earlier paper. The characteristic feature of the disease is sudden death occurring in an animal which appears to be healthy. In the majority of cases the symptoms last from five to twenty minutes. Not infrequently the owner on entering the stable is surprised to find dead a calf which had seemed healthy when seen a few hours before. If the calves are pail-fed, the added excitement of feeding may precipitate a fatal attack even before the meal is finished. In a few cases the owner has observed, prior to the attack, a slight dullness and inappetance with accelerated respiration. Calves which are growing rapidly or animals that are in good condition are affected more frequently than poorer members of the group. The occurrence of diarrhea has been reported, but this is unusual. Violent bellowing usually precedes death. Occasionally, an affected animal becomes wild and delirious, bawling and rushing madly around the pen.

Feed.—Almost all the cases occur on dairy farms where the care, feed, and management are better than average. The calves are usually being pail-fed. This is almost the direct opposite of the condition prevailing in outbreaks of muscular dystrophy. Also, the latter disease occurs exclusively in nursing calves in beef herds.

Age and Incidence.—Age is undoubtedly an important factor. The most susceptible age is between 6 and 10 weeks. The disease is uncommon in calves less than 1 or more than 3 months of age. In a small herd, the casualties are usually light but, in larger herds, many animals may succumb during one season. The deaths are usually spaced, and occur as calves reach the age of maximum susceptibility. A peculiarity of the disease is the fact that it rarely recurs in subsequent years. Here again it differs sharply from "sudden death" associated with myocardial and skeletal muscle degeneration.

ETIOLOGY

Quoting from the previous paper[1] with regard to etiology, the following statement is significant:

> The theory advanced to explain the sudden death is based upon both clinical observations and pathological findings, especially the histopathology. We believe that a bacterial toxin is formed in the gastro-intestinal tract which causes damage to the myocardium . . . there is almost always hemorrhage in the spleen and gastro-enteritis. The frequency of nephrosis with

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The author acknowledges the assistance of Dr. R. F. Montgomerie, Wellcome Research Laboratories, Beckenham, England, in typing some of the isolated organisms.

hemorrhage gives added weight to the hypothesis of a toxemia.

The frequency with which *Cl. welchii* has been isolated from the small intestine, coupled with the fact that no other pathogen has been found, brings additional support to the hypothesis of a *Cl. welchii* toxemia. On three occasions, mice injected intravenously with centrifuged supernatant fluid of intestinal contents from typical cases have succumbed almost immediately. Further supporting evidence is derived from the fact that in 2 cases liquefaction necrosis of the kidney (pulpy kidney) indistinguishable from the characteristic lesions seen in *Clostridium ovitoxicus* infection have been observed. In this and other respects, the disease closely resembles pulpy kidney disease in the lamb. The condition of the kidneys was not due to postmortem change. Anaerobic cultures made from the contents of the small intestine frequently show heavy growth of *Cl. welchii*. On typing,* however, none of the organisms were placed in the *ovitoxicus* group; all belonging to group A. Only the more recent isolations have been typed. As previously stated, the disease usually occurs on farms where there is a tendency to pamper and overfeed. In the majority of instances there has been no change in either feed or management.

PATHOLOGY

The most constant and significant features of the disease as observed at necropsy occur in the kidneys and spleen.

Kidney.—The color is pale and the parenchyma is either markedly friable or moderately so. Subcapsular congestion and hemorrhage is frequently seen.

Spleen.—The spleen is slightly enlarged, swollen with rounded borders, and pulpy on palpation. On incision, the pulp is readily scraped from the cut surface.

Liver.—The paler color of this organ suggests cloudy swelling. Well-marked, passive congestion has been observed, but this is rare. Several cases of acute serofibrinous cholecystitis have been observed.

Lungs.—Diffuse mild congestion with slight edema has been observed in the lungs.

Heart.—Hemorrhages are usually present in the epicardium, especially in the region of the coronary furrow. Subendocardial hemorrhage is common.

Abomasum.—The gastric mucous membrane may be normal, but a mild to severe gastritis is usually present.

Small Intestine.—In the majority of cases, severe congestion of the mucosa is present in the duodenum and anterior portion of the jejunum. Occasionally, a hemorrhagic enteritis is present and the ingesta is stained with blood.

HISTOPATHOLOGY

Heart.—Damage to the myocardium is slight. Individual fibers show cloudy swelling and occasionally hyaline degeneration, while petechial hemorrhage is seen beneath the covering of serous membranes. In some cases, degeneration and necrosis with slight calcareous infiltration is present in the Purkinje's cells. The nuclei of these cells show karyolysis.

Small Intestine.—Desquamation of the epithelium, with necrosis of the denuded villi, is frequent.

Kidney.—The convoluted tubules show extensive degeneration and necrosis. The lumens of the tubules contain an amorphous precipitate resembling albumen. Subcapsular hemorrhage, extending between the peripheral tubules, is usually present. Congestion and hemorrhage is seen in the medulla.

Spleen.—In most cases, the delicate fibrillar mesh has been injured and numerous petechial hemorrhages are scattered throughout the organ.

Lung.—Slight or marked congestion is always present and many alveoli contain a delicate serous exudate.

Liver.—Cloudy swelling of the hepatic cells is general, while individual cells and small groups of cells show the presence of karyolysis.

Lymph Nodes.—Regional lymph nodes show edema and peripheral congestion with slight hemorrhage.

DIFFERENTIAL DIAGNOSIS

Sudden death due to enterotoxemia must be distinguished from the sudden death due to myocardial degeneration which occurs in some cases of *alpha*-tocopherol deficiency. This may readily be done due to the fact that in the latter disease the kidney and spleen are normal, while the heart muscle presents many large and small, pale

*The organisms were typed by the Wellcome Research Laboratories, Beckenham, Kent, England.

gray areas of degeneration. In magnesium deficiency, calcareous deposits may be found in the endocardium and atheromatous-like plaques in the larger blood vessels. A blood-magnesium herd test should be of value. The possibility of acute lead poisoning should always be considered and suitable chemical tests for lead be made.

PREVENTIVE TREATMENT

In most cases, the course of the disease is so rapid that curative treatment can not be administered. After the first fatality, the owner is advised to alter the feed if it is unusually high in protein. All calves over 3 weeks and under 4 months of age should be given *perfringens* antitoxin which must be repeated every three weeks until the highly susceptible age is passed. An alternative treatment is inoculation with a chemically killed culture of the *Cl. welchii* isolated. It is not possible to assay the value of these treatments as the necessary controls could not be obtained. I know of no instances where deaths have continued after the inauguration of the treatment.

CONCLUSIONS

1) A rapidly fatal disease of calves (sudden death) may be caused by an enteric infection with *Clostridium welchii*, type A.

2) This disease may without difficulty be differentiated from similar rapidly fatal diseases of young calves by simple bacteriological and pathological methods.

3) *Clostridium welchii* type A antitoxin or chemically killed cultures should be used in prophylaxis.

References

[1]Schofield, F. W.: Sudden Death in Calves Associated with Myocardial Degeneration. Canad. J. Comp. Med. and Vet. Sci., *11*, (1947): 324-329.

[2]Vawter, L. R., and Records, E.: Muscular Dystrophy (White Muscle Disease) in Young Calves. J. A.V.M.A., *110*, (1947): 152-157.

Trichloroethylene Poisoning in Man

Trichloroethylene (the solvent involved in poisonous soybean meal) is used in industry as a de-greasing fluid, as a commercial solvent, and as a dry cleaning agent. In medicine, it is sometimes used as an analgesic or narcotic. Following reports of fatal toxicity in Europe, a search of data of the Department of Labor in New York State revealed five deaths due to trichloroethylene. Four of the victims had been employed in de-greasing operations and one accidentally drank trichloroethylene.—*J.Am.M.A., Nov. 6, 1954.*

Aureomycin Treatment of Pneumonia in Swine

Contagious pneumonia in swine in Sweden, considered to be caused by a primary virus and variable secondary bacterial infections, was treated experimentally without identification of the etiological factors. An antibiotic was used, thereby hoping to indicate the relative importance of the viral and bacterial etiological agents. Two litters of 6 and 7 pigs from infected sows, kept in infected pens with the sows, began to show typical illness at about 20 days of age. Aureomycin® (40 mg./kg. daily) was immediately given to half the pigs, some for ten days, others for fifty days. The others were untreated. All became ill by the twenty-eighth day and some died. At 80 days of age the controls weighed about 17 kg., the ten-day-treated pigs about 27 kg., and those treated fifty days weighed about 32 kg. When treatment was delayed, the benefits were less but still significant.

Since this investigation it has been indicated that aureomycin is effective on some viruses; therefore the benefits may not indicate control of secondary infection only.—*Nord. Vet.-med., 6, 1954.*

How Cortisone Checks Inflammation

Adrenocortical extract or cortisone suppresses the increased permeability of small blood vessels and the migration of leukocytes into the inflamed area. This activity is apparently due to the effect of cortisone directly on the injured cells, thus preventing their liberating chemical factors (leukotaxine and others) which otherwise would increase the permeability of these vessels. This probably explains the beneficial effects of local injections.—*Science, Dec. 17, 1954.*

New Syngamus Found in Sinuses.—After a single pair of helminths belonging to the genus Syngamus were found in the frontal sinus of a cat in Ceylon, a search in other cats revealed four more similar pairs.—*Ceylon Vet. J., June, 1954.*

Chronic Pulmonary Osteoarthropathy in a Dog

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Maplewood and South Orange, New Jersey

In the interest of further documenting the annals of clinical veterinary medicine and pathology, this case of chronic pulmonary osteoarthropathy in a dog is recorded.

REVIEW

Mather and Low[1] have recently published a case report, together with a comprehensive summation of occurrences reported in the literature, of chronic pulmonary osteoarthropathy in the dog. The relationship between extensive lung pathology and hyperplastic osteoarthropathy of the limbs has been established, but the pathogenesis has been postulated on the theoretical concept of a complex toxic-metabolic etiology initiated by the lung disease. In qualification of the stated pathogenesis, it should be noted that the osseous changes are not a constant complication of all instances of lung neoplasm or infection, but rather a selected sequel of individual cases in which certain still-undetermined criteria have been fulfilled.

Since the existence of both lung tumors and forms of chronic pulmonary infection have been repeatedly observed without coexistent bony changes, the above stated qualification is merely to clarify the assumption or statement that lung neoplasm and osteoarthropathy are always one entity. If this were true, this disease would not be as exotic as it apparently is.

CASE REPORT

On Aug. 21, 1953, a black, male Cocker Spaniel, 12 years of age, was presented for diagnosis and treatment of a lameness associated with a progressive enlargement and thickening of the limbs. The owner first noticed this condition four months prior to examination. Anamnesis revealed that the patient on exertion experienced coughing and dyspnea, a condition which began one year prior to the onset of the osseous changes accompanied by lameness. Since the dog led a sedentary life, the lameness appeared of greater significance to the owner than the respiratory symptoms.

A routine physical examination disclosed a rather obese animal with a dry, scaly coat. Chronic bilateral otitis externa accompanied the general poor condition of the patient. Auscultation of the chest revealed definite areas of pulmonic dullness and a rather indistinct cardiac bruit. The dog walked with difficulty characterized by a slow, unsteady gait associated with limited mobility in climbing stairs. The significant finding was a quadrilateral, hard, bony enlargement of the extremities involving the bones distal to the elbow and the stifle joints. Digital pressure over the thickened limbs failed to elicit pain or pitting.

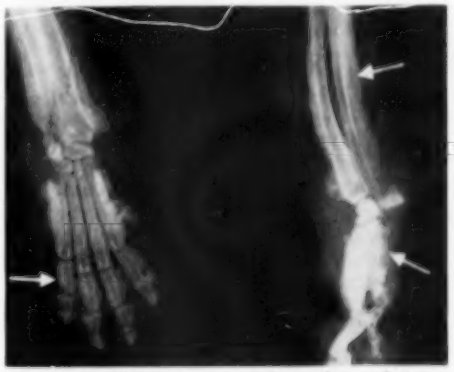

Fig. 1—Coralliform periosteal hyperplasia of bones in the forelegs of a dog.

Fig. 2—Proliferative changes in bones of the hindlegs of a dog.

Radiographic Findings. — Radiograms were taken of the chest, fore- and hindlegs. The radiographic findings were interpreted with the consultative assistance of a local radiologist.*

The right humerus showed minimal peri-

Dr. Arlein is a small animal practitioner in Maplewood, N.J., and Dr. Pollock is a small animal practitioner in South Orange, N.J.

[1]Mather, G., and Low, D.: Chronic Pulmonary Osteoarthropathy in the Dog, J.A.V.M.A., 122, (1953): 167-171.

*Dr. C. Richard Weinberg, radiologist, Newark, N.J.

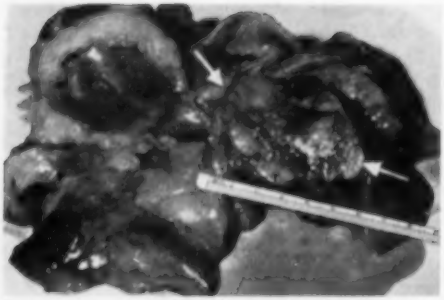

Fig. 3—Adenocarcinoma (6 cm. long) in the lung of a dog.

osteal proliferation of the longitudinal onion skin-type. The left humerus had advanced periosteal proliferation with resultant apparent thickening of the bone. Advanced proliferative processes were evident that involved the radius and ulna of both legs. There were variable changes in the metacarpi and phalanges, ranging from minimal to advanced proliferation in a coral-like pattern and in actual broadening of bone, with a clubbing appearance of the toes (fig. 1).

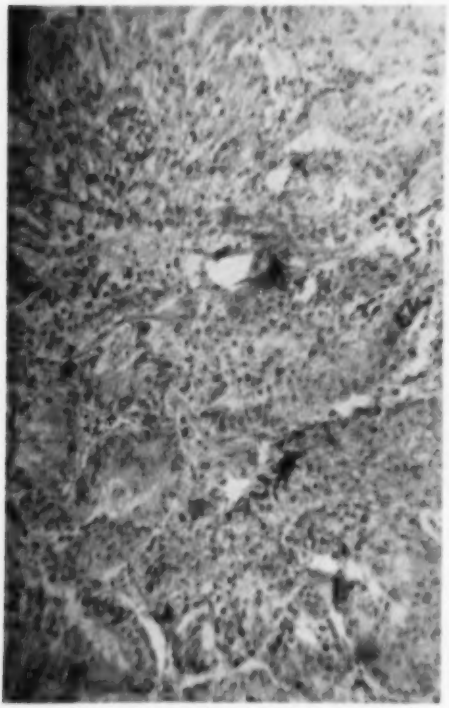

Fig. 4—Section of an adenocarcinoma from the lung of a dog. x 160.

Chest radiograms revealed mass density of right posterior lung field which was contiguous with the heart shadow—significant of a large consolidation or infiltration of lung. The left lung showed loss of aeration and poor lung markings. Both sides of the diaphragm were depressed.

Early periosteal proliferative changes were seen in both femurs. Advanced periosteal proliferative changes involved the tibias and fibulas, with resultant broadening of bone structures. It is interesting to note that proliferations were seen on the posterior aspects of both os calci, especially on the left side. The metatarsi also had advanced proliferative changes (fig. 2). Soft tissue thickening was apparent overlying the thickened bones of all four legs.

Salicylates and phenobarbital were dispensed for the alleviation of locomotor pains, and the owner reported satisfaction with this regimen. Observation of the dog as an out-patient was continued intermittently until April, 1954. During this period the animal showed gradual deterioration evidenced by an increasing dehydration of the skin with manifested lesions of dermatitis and pruritus, periods of diarrhea, lessened appetite, loss of weight, and greater difficulties in locomotion particularly on rising from a prone position.

On April 2, 1954, the dog was presented in a condition that was judged to be the terminal stages of illness, characterized by complete anorexia, labored respirations, fetid breath, vomiting, diarrhea, purulent conjunctivitis and rhinitis, necrotic foci of the mouth including the tongue, very limited locomotion, and severe depression. Only on the insistence of the owner was supportive treatment continued until April 9, when euthanasia was performed followed by necropsy.

Necropsy Findings.—The only significant gross pathological change was invasion of the lobes of the lungs and bronchial nodes with large, hard tumor masses (fig. 3). Although other incidental pathological changes were present in several of the organs, there was no evidence of neoplastic metastasis of importance for record here.

Microscopic Examination.—A local pa-

thologist** performed the histopathological studies, and his report is as follows:

Lungs.—Sections from the lungs show an adenocarcinoma which replaces the lung tissue in some areas, while in others it compresses it, and there is an additional bronchopneumonia (fig. 4).

Diagnosis.—Primary pulmonary adenocarcinoma of the lung with metastasis to bronchial lymph nodes.

SUMMARY

A case study of chronic pulmonary osteoarthropathy in a dog is presented. The chronicity of the osseous lesions was approximately one year which is of significantly longer duration than any of the cases reviewed by Mather and Low.[1]

**Dr. William G. Bernhard, pathologist, St. Barnabas Hospital, Newark, N. J.

Mink Distemper in 1954

Distemper occurred on about the same number of mink ranches in 1954 as in previous years. However, none occurred in the breeding herds in which the parent stock had been vaccinated. Although the kits in such herds are considered susceptible, the disease usually appears first among adults.—*Am. Fur Breeder, Jan., 1955.*

Ascaris Pneumonia in Pigs

To investigate the belief that migrating larvae of *Ascaris lumbricoides* commonly cause a pneumonia in the antero-inferior part of the lungs, associated with coughing and unthriftiness, 6 pigs known to be free from virus pneumonia were each given 250,000 to 500,000 infective embryonated ascaris eggs in a single dose. The temperature of each rose markedly on the fourth to sixth days and remained elevated for a few days. On the seventh day, 3 pigs developed a soft, moist cough quite different from the harsh cough caused by virus pneumonia. This cough disappeared in about five days as the temperature receded, after which the pigs seemed clinically normal and thrifty.

At necropsy the lesions in the lungs were quite different from virus pneumonia. The pigs destroyed on the fifth and seventh days had punctate hemorrhages with small surrounding areas of consolidation throughout the lung; the pig destroyed the tenth day had similar lesions which appeared to be healing; and the 2 destroyed on the twenty-first day had macroscopically normal lungs. The major lesions in each of these pigs were in the liver which showed generalized reticulate fibrosis, a few "milk spots" and many small hemorrhages; lesions which persisted. These results support the view that many cases diagnosed as ascaris pneumonia are probably virus pneumonia.—*Vet. Rec., Nov. 27, 1954.*

A New High in Meat Production

Meat production in the United States in 1954 was estimated at 25,575,000,000 lb., which was a 3 per cent increase over 1953 and more than a 1 per cent increase over the previous record year of 1944. Slightly more than half of the meat (13 billion lb.) was beef, an increase of 85 per cent since before World War II. In 1953, United States beef and veal production exceeded that of the six next highest meat-producing countries. Pork and lamb production were about 1 per cent higher than in 1953. The average per capita consumption of meat, estimated at 156 lb., also a new high, included 79 lb. of beef, 62 lb. of pork, and 4.6 lb. of lamb (mutton seems to be an increasingly obsolete term).—*Kansas Stockman, Dec., 1954.*

Vesicular Exanthema in San Diego County

When pressure from other areas was exerted upon California for the control of vesicular exanthema, the local hog ranchers, who had learned to live with V. E., switched from opposition to support of a garbage-cooking program. In June, 1954, the San Diego county ranchers met to urge action which would speed their release from quarantine. The 43 ranchers feed about 26,000 hogs on garbage, 80 per cent of the county's total hog population. Each new licensee pays a fee of $15 for inspection and, if approved, he is then entitled to an annual license at a fee of $20 per year for more than 20 hogs, $10 per year for less. Each ranch is routinely inspected every ten days and before each shipment of hogs. During the last fiscal year the county had five outbreaks of vesicular exanthema which involved 8,360 hogs, compared to a total of 77 outbreaks in the three previous years.—*Ann. Rep. San Diego (Calif.) Livestock Dept., 1953-1954.*

Pasteurellosis and Enzootic Pneumonia in Goats

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Army Chemical Center, Maryland

PASTEURELLOSIS has long been considered one of the most important diseases affecting livestock, including rabbits and poultry, either in enzootic or epizootic proportions, all over the world. It has been frequently diagnosed in domesticated species such as cattle, sheep, and goats. Pathologically, in most species it produces a pleuropneumonia often associated with multiple hemorrhages in many tissues, septicemia, high fever, and death.

Pasteurella multocida is generally accepted as the etiological agent when it can be isolated from the infected tissues. The name "pasteurellosis" has largely replaced the once common name of hemorrhagic septicemia. Some also use the term, "shipping fever," as a synonym for a certain form of what may be pasteurellosis in some species. Since there has been difficulty in reproducing this disease experimentally, investigators have been searching for a virus or some other agent which might be the primary etiological factor. However, *P. multocida* has been isolated consistently from the lungs of sheep[1-8] and goats[9] affected with the disease and, thus, even if the organism is not the sole cause, it evidently is of importance in producing, in part, the characteristic pathological changes. The picture of pasteurellosis in goats resembles that in sheep.

Pasteurella multocida may be a normal habitant of the nasal musoca and, thus, it is usually impossible to eliminate it from an animal colony; yet studies in sheep have failed to reveal the organism in normal lung tissue.[2,3] Pasteurellosis, apparently, does not usually develop unless there are predisposing factors such as shipping, exposure to the elements, parasitism, poor housing, overcrowding, or malnutrition to influence the animals' resistance. Under such conditions, the organism may invade the lungs and may also produce a fatal septicemic infection. With enhancement of its virulence, the organism appears capable of initiating an outbreak and may be easily transmitted to other animals by direct or indirect contact, even if they have not been exposed to predisposing factors. Younger animals, in general, have seemed more susceptible than older ones.

The term, *P. multocida*, is of recent origin. In the past, Pasteurella organisms were classified with reference to the host, which led to a large array of terms such as *Pasteurella suiseptica, P. bubaliseptica, P. caniseptica, P. boviseptica, P. equiseptica, P. aviseptica,* and *P. oviseptica.* Earlier still, the organism was called *Bacillus suisepticus.* It was recognized that all these strains did not represent true species differences and that one strain could infect several species of hosts.[9] Cultural and cross-immunization studies,[9, 10] as well as serological typing,[11] demonstrated little correlation between these characteristics and the strains identified by the susceptible host. More recent serological typing work is generally accepted as standard[12, 14] and indicates several common serological types with some variants yet to be classified.

In immunization, selection by serological type is important since there is little if any cross-immunity between types.[14] The antigenic properties are concentrated in the bacterial capsule, and only virulent cultures grown under optimum conditions possess an amount of capsular material necessary for effective immunization. On artificial mediums, cultures should be grown at 37 C. and harvested at twenty-four hours.[15-17] Growth in chicken embryos produced a higher concentration of capsular material than growth on artificial mediums and, consequently, had greater immunizing properties.[18]

The disease described had been enzootic in the goat herds maintained at this laboratory for some time. This study was conducted to determine the nature and cause of the disease, to seek methods of prevention and therapy, and to determine the cultural and serological characteristics of the etiological organism. Also, healthy animals were experimentally inoculated in an attempt to reproduce the disease.

DESCRIPTION OF THE DISEASE

The disease picture of several outbreaks of pasteurellosis in goats at this laboratory was as follows. The first indication of the presence of this disease in the herd usually was the sudden death of a few animals, followed by clinical evidence of acute and chronic infection in others in the herd. The main signs were lethargy, anorexia, a mucopurulent discharge from the eyes and nose, coughing, dyspnea, and a temperature of 104 to 106 F. The animals were inactive and sometimes had diarrhea. The intensity of these signs depended upon the severity of the infection. The course of the disease was usually one to two weeks, but deaths occurred from one day to four weeks after the first sign. The morbidity was usually high with a mortality of about 10 per cent.

The lesions in victims of the acute form were generally systemic. Extensive subcu-

This work was performed at the Chemical Corps Medical Laboratories, Army Chemical Center, Md.

The authors express their gratitude to Dr. R. L. Burkhart of Lederle Laboratories for his efforts in typing the organism and to Dr. J. R. M. Innes for his guidance.

taneous hemorrhages were often found in the pectoral regions, but there were also submucous and subserous petechiae and ecchymoses of visera, e.g., in the pericardium, true stomach and intestines, respiratory tract, liver, kidneys, and lymph nodes. Pneumonic consolidation (hemorrhagic, fibrinous, or purulent) was invariably found involving parts of lobes or whole lobes. Enteritis was sometimes observed. Animals necropsied at a later stage in the acute form of the disease usually showed less evidence of hemorrhagic sequelae and the lesions in the lungs then showed gray hepatization involving one or more whole lobes.

Lesions in the chronic form were generally confined to, or localized in, the lungs with areas of consolidation involving one or more lobes. Adhesions of the pleura were often observed and there was sometimes evidence of pericarditis. Abcess formation in the lungs was frequent, probably enhanced by secondary invaders such as streptococci and staphylococci which were isolated from abcesses during this stage.

All of the goats with pasteurellosis exhibited extensive lung lesions. Microscopically, the lung lesions from a number of goats which died at different stages of the disease showed a varying picture. All seemed to revolve around the development of what may have been a focal bronchopneumonia which was spread by aspiration into the peribronchial tissue. One early characteristic seemed to be extensive production of transudate in the interstitial tissue separating the lung lobules. Thus, enormously thickened, loose edematous sheets of tissue separated the lung parenchyma (fig. 1, 2) which showed all features

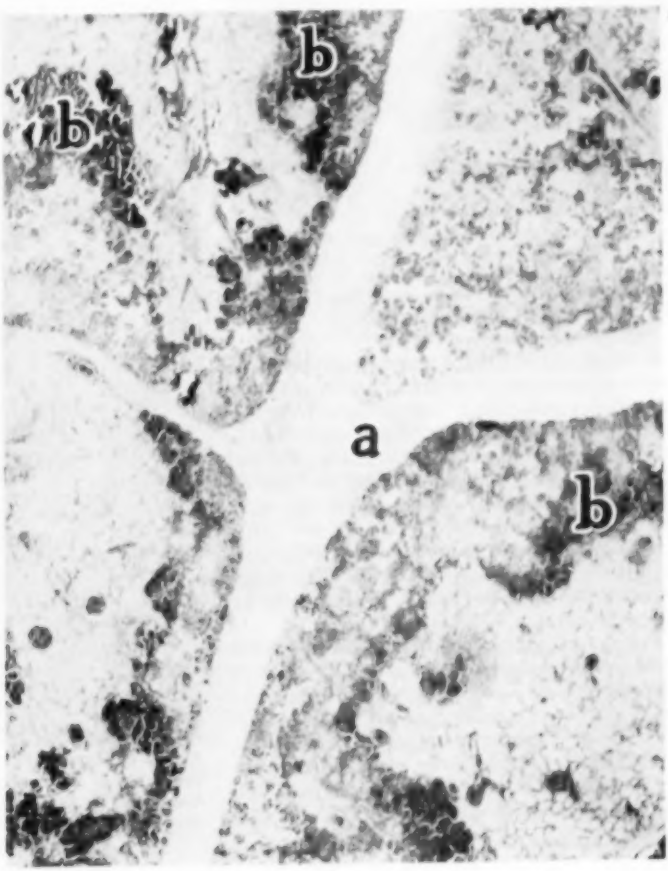

Fig. 1—Pasteurellosis in a goat. Under low power, involvement of the lung with thick, edematous interstitial septums (a) can be seen. Alveoli of affected parts show a varying picture with plugs of cellular exudate (b), mainly composed of polymorphonuclear cells, massive edema, some hemorrhage, and much congestion. Hematoxylin-eosin, x 20.

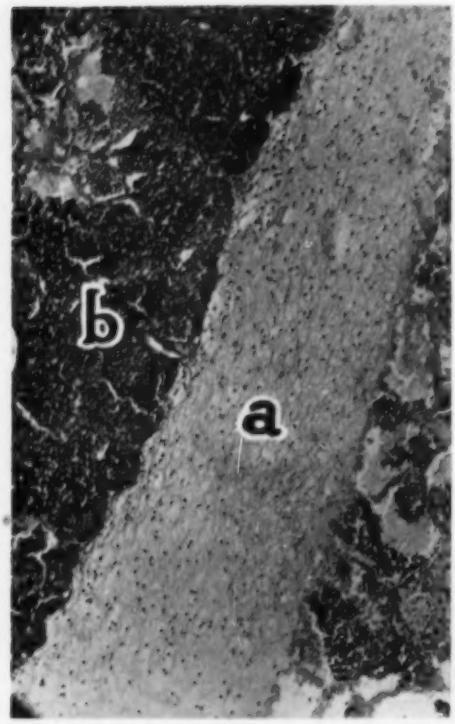

Fig. 2—Pasteurellosis in the same goat shown in figure 1. This higher magnification shows edematous interstitial septums (a) and character of cellular exudate (b) in consolidated areas of lung tissue. Hematoxylin-eosin, x 100.

of acute and subacute pneumonic processes with congestion, hemorrhage, and plugs of cellular exudate in alveolar lumens. Necrosis was common and led to true abcess formation (fig. 3) and even cavitation. Pleural inflammation was common and resulted in fibrinous adhesions which could be seen with the naked eye.

Some cases were complicated with systemic manifestations. In addition, the lungs sometimes showed heavy infestations by nematodes.

Diagnosis presented little difficulty as it was relatively easy to isolate the causative organism, and no toxic materials were present. When bacteriological examination could not be made immediately after death, emulsions of lung tissue were injected intraperitoneally into a mouse and pure cultures of *P. multocida* were readily recovered.

Treatment of pasteurellosis in these goats met with some success. Various sulfonamides, antibiotics, and biological products were used. Commercial antiserums did not appear to alter the course of the disease, while streptomycin and the sulfonamides gave only fair results. *In vitro* tests showed that the strain of Pasteurella isolated frequently was sensitive to penicillin, and results with therapy verified this fact. Procaine penicillin in oil, at the rate of 600,000 to 900,000 units per animal every other day, usually resulted in recovery within three to five days, but if infection persisted or the animal suffered a relapse, the prognosis became unfavorable. Supportive therapy, in addition to other treatment, was sometimes helpful.

Fig. 3—In this case of caprine pasteurellosis, the disease process has terminated with multiple abscess formation (c). Parts of lung tissue between abscesses show a picture comparable to that seen in figures 1 and 2. Hematoxylin-eosin, x 20.

DESCRIPTION OF AN OUTBREAK

In order to evaluate the prophylactic use of a commercial antiserum for preventing pasteurellosis in goats, 193 new arrivals were divided at random into three groups and the antiserum given the day of arrival at the rate of 0.5 cc. per pound of body weight to group A, 1 cc. per pound to group B, while group C received no treatment (table 1). The antiserum was of bovine origin and contained antibodies for three serological types of *P. multocida* in the ratio of 25 per cent for type I, 50 per cent for type II, and 25 per cent for type III. The goats were of many ages and breeds. The range area was limited and these new arrivals were kept with 120 goats which were chronically infected with pasteurellosis, so presumably all were exposed. This study was conducted from June through August when the weather was hot and humid. The ration consisted of timothy hay and a commercial horse feed containing 9 per cent protein. The incidence of intestinal parasitism and lungworm infestation was high even though a free-choice phenothiazine salt mixture was available.

TABLE 1—Incidence of Pasteurellosis in Two Serum-Treated and One Control Group of Goats

Group	No. in group	Morbidity (No.)	Morbidity (%)	Mortality (No.)	Mortality (%)
A—0.5 cc. antiserum per lb. of body wt.	121*	37	28.9	5	4.1
	121†	54	44.6	15	12.4
B—1.0 cc. antiserum per lb. of body wt.	59*	14	23.7	2	3.4
C—Control no antiserum	13*	2	15.4	1	7.7
Total for groups given antiserum (20-day observation only)	180	51	28.3	7	3.9

*Animals in these groups were observed for twenty days.
†Same "A" group but including observations for forty days.

The goats were observed daily and those in the groups under study that became infected were removed to a paddock and treated with 600,000 to 900,000 units of penicillin in oil every other day. Postmortem examinations, including bacteriological cultures, were made on fatal cases.

There was no reduction in the morbidity and mortality in the group receiving the larger dose of antiserum (table 1). Unfortunately, the group receiving no treatment was not large enough for valid conclusions, but it appeared that the use of antiserum had little effect. The goats became ill at about the same rate in all groups. Only 1 goat became ill before the fifth day after arrival, which indicated that the infection was acquired on the premises. The same strain of *P. multocida* was isolated from all fatalities. At the end of the observation period, the goats were moved to a 60-acre pasture and the incidence of illness thereafter quickly declined.

DESCRIPTION OF STRAIN ISOLATED

Since the same strain was isolated at every attempt during the outbreak described, it was assumed that this was the most important, if not the only, causal organism. It was found in great numbers in consolidated lung tissue and sometimes in blood.

The organism grew well on blood agar but scant growth was obtained on nutrient agar and in nutrient and brain-heart infusion broths. Sugar reactions were obtained when cystine-trypticase agar was used as a base, and acid but no gas was formed in dextrose, sucrose, mannitol, levulose, sorbitol, and trehalose while lactose, maltose, and arabinose were not fermented. The organism was nonhemolytic, indole was formed, nitrates were reduced to nitrites, and hydrogen sulfide was produced in small amounts. By disc tests, the organism was sensitive to penicillin and to a lesser degree to streptomycin and aureomycin.[8] The strain was pathogenic for mice, dilutions of the primary isolation killing them within twenty-four hours.

Agglutination tests were performed with

TABLE 2—Mortality Data on Mouse-Protection Tests Made with Two Lots of Pasteurella Multocida Antiserum

Group	Deaths at dilutions of the isolated strain of P. multocida: 1 to 5	10^{-1}	10^{-2}	10^{-3}	10^{-4}	Totals	Remarks
Antiserum A	4/4*	4/4	1/4	0/4	0/4	9/20	Most deaths were on the 2nd day
Antiserum B	4/4	4/4	1/4	0/4	2/4	11/20	Most deaths were on the 2nd day
No treatment	4/4	4/4	2/4	3/4	2/4	15/20	Most deaths were on the 1st day

*The numerator indicates number of mice that died; denominator, the number in the group at that dilution.

the organism heated for ten minutes at 100 C., as suggested by Dubos.[19] No agglutination was obtained with the two commercial antiserums described in table 2. The organism was agglutinated up to a 1:640 dilution of serum from a rabbit given repeated injections of a bacterin prepared from this strain of the organism, while the organism was agglutinated up to 1:80 dilution of serum from a rabbit given repeated injections of a commercial bacterin containing antigens for types I, II, and III. Control rabbits were negative. This strain was sent to another laboratory* for classification and they reported that this *P. multocida* strain did not fall in serological type I, II, or III.

Experimental Inoculation of the Organism in Goats

Three normal female goats with no history of pasteurellosis were challenged with this strain of *P. multocida* to determine if the disease could be reproduced. After a mouse passage, a 24-hour culture was harvested from blood-agar slants and the resulting suspension was adjusted to a reading of 145 on the Klett-Summerson photometer. The trachea of the goat was fixed externally between two fingers, a hypodermic needle inserted intratracheally, and 10 cc. of this suspension was injected.

The 2 goats challenged in October exhibited partial anorexia, a slight mucopurulent nasal discharge, and some lethargy at the end of a week, but appeared to have recovered at the end of the second week. At that time, the goats were destroyed and necropsy revealed only a slight tracheitis and a few small consolidated areas in the lungs, while the rest of the postmortem picture was essentially normal. Lung cultures were negative.

The third goat was challenged in March with a culture prepared in the same manner except that autoclaved mucin was added to make a 5 per cent suspension. After the fifth day, a temperature rise to 104 to 106 F. occurred. By the seventh day, the goat exhibited a mucopurulent discharge from the eyes and nose, complete anorexia, lethargy, and dyspnea. These signs became progessively worse until death on the thirteenth day. Necropsy revealed a pneumonic process involving the entire cardiac lobe of the left lung with adhesions to the pleura and pericardium. Cultures of the blood and lungs resulted in the same strain of *P. multocida* being isolated as had been injected.

Mouse-Protection Tests Using Various Prophylactic Agents

Two commercial antiserums were tested in the first trial (table 2) by subcutaneous injection, three hours before challenge, of 0.2 cc. into female mice weighing 20 to 28 Gm. The challenge culture was produced from the isolated strain after it had been passed through a mouse to insure virulence. A 24-hour culture in brain-heart infusion broth, enriched with 2 per cent rabbit blood, was prepared in dilutions of 1:5, 1:10, 1:100, 1:1,000, and 1:10,000 in 1 per cent peptone water. Growth was light on the broth culture. The mice were injected intraperitoneally with 0.5 cc. of the dilution. Deaths were recorded within a seven-day period and heart blood was cultured in 25 per cent or more of all mortalities. *Pasteurella multocida* was present in all cultures. Antiserum A was the same product as used in the described outbreak in goats. Antiserum B was a commercial one and contained antibodies for many strains of Pasteurella identified by the zoological host method of classification. It was of equine origin, and the strains were identified as *P. equiseptica, P. oviseptica, P. suiseptica, P. boviseptica,* and *P. bubaliseptica.*

Although the mortality was less in the treated mice than in the controls, the difference was not significant in a sample of this size.

In the second trial (table 3), three antigenic preparations were injected subcutaneously into female mice, weighing 20 to 28 Gm., two and three weeks before challenge. Group A received injections, 0.5 cc. per mouse, of a commercial bacterin which contained antigens for three serological types of *P. multocida* in the ratio of 25 per cent for type I, 50 per cent for type II, and 25 per cent for type III. Group B received injections of 0.1 cc. of an autogenous bacterin of the isolated strain of

TABLE 3—Mortality Data on Mouse-Protection Tests Made with Mice Immunized with Three Types of Pasteurella Multocida Antigen

Group	Deaths at dilutions of the isolated strain of P. multocida						Total	Remarks
	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}	10^{-7}		
A—Commercial bacterin	5/5*	5/5	5/5	5/5	4/4	†	24/24	Most deaths were on the 3rd day
B—Autogenous bacterin	2/5	2/5	1/5	2/5	0/5	†	7/25	Most deaths were on the 2nd day
C—Commercial aggressin	5/5	5/5	5/5	3/5	5/5	4/5	27/30	Most deaths were on the 3rd day
D—No treatment	5/5	5/5	5/5	5/5	2/5	2/5	24/30	Most deaths were on the 3rd day

*The numerator indicates number of mice that died; denominator, the number in the group at that dilution.
†Not run.

*Lederle Laboratories, Pearl River, N.Y.

P. multocida prepared in the following manner: A 24-hour culture was harvested from blood-agar slants, the resulting suspension adjusted to a reading of 145 on the Klett-Summerson photometer, and inactivated with enough formalin added to make a 0.1 per cent solution. Group C received 0.5-cc. injections of a commercial aggressin prepared in horses by the use of the buffalo strain of *P. multocida (P. bubaliseptica)*. Group D was left as a control. The challenge procedure was the same as in the first trial except that the challenge culture was harvested from a 24-hour growth on blood-agar slants and the suspension adjusted to a reading of 145 on the Klett-Summerson photometer. Dilutions of this suspension used were 1:100, 1:1,000, 1:10,000, 1:100,000, and 1:1,000,000.

The results showed no difference in the mortality of mice administered the commercial bacterin, the commercial aggressin, and the controls. However, those mice receiving the autogenous bacterin prepared from the isolated strain were significantly ($p > 0.01$) more resistant to the challenge than the other groups and appeared able to withstand over 1,000 times the fatal challenge dose.

DISCUSSION

Outbreaks of pneumonia in goats at this laboratory were identified as pasteurellosis by the pathological and consistent bacteriological findings. The clinical disease picture was similar to that described for sheep.[7] The outbreak described was paralleled by known predisposing causes such as overcrowding, parasitism, shipping, and exposure to the elements, as have been noted for other species. Further studies are indicated to determine the relationship between lungworms and this infection, since it would seem that the presence of a variety of helminths might predispose to infections. An outbreak has been described in sheep which were infested with lungworms.[4] The pathological changes closely resembled those described for pasteurellosis in sheep[7] and for shipping fever in cattle.[20]

A variety of treatments have been suggested for pasteurellosis in other species. In one study using 600 chemicals in mouse- and chick-protection tests, several of the sulfonamides gave superior results.[21] The following chemotherapeutic and antibiotic treatments have been suggested for shipping fever in cattle, which of course may or may not be pasteurellosis: sulfamerazine, sulfamethazine, sulfathiazole, penicillin, streptomycin,[22-24] and terramycin[9] with antiserum.[25] In an outbreak of pasteurellosis in goats in India, the disease picture was similar to that observed here and formalized bacterins gave encouraging results when used prophylactically.[6] Probably each situation should be treated separately because of the variability of the bacteria. No doubt the best course is to use preventive measures such as good husbandry and immunization with bacterins which contain antigens of the same serological type as the prevalent strains.

Intratracheal injection of a virulent culture was successful in producing the infection in 1 of the goats in which sterile mucin was added to the challenge culture. In the Indian outbreak, the disease was reproduced in goats when Pasteurella organisms were injected by various routes.[6]

The sugar reactions of the strain of *P. multocida* isolated from the goats here did not match those of the strains isolated from sheep.[1,4,5] This organism is generally more sensitive to penicillin than most other antibiotics[26] as was found here. The prophylactic use of antiserum does not always prevent pasteurellosis, nor does immunization with available bacterins always seem to lower the incidence of the disease.[27] In fact, in an outbreak affecting cattle, the treated animals had a higher mortality than those given no bacterin.[23] Many of these results might be explained on the basis of variant serological types. Antiserum containing antibodies for serological types I, II, and III did not lower the incidence of pasteurellosis in the goat herd during the described outbreak, nor did it protect mice against the strain of the organism isolated. Carter[14] found that there was little or no cross-immunity between serological types and, thus, our findings are in agreement since we found no cross-immunity between the variant serological type isolated and types I, II, and III. None of the commercial bacterins and antiserums tried appeared to contain antigens or antibodies for this variant type nor did they protect against this strain. Only an autogenous bacterin protected mice against this type. There is a need for commercial laboratories to include more serological types in bacterins and antiserums.

Since the disease can not be divorced from environmental factors, the control must rest primarily with good animal husbandry practices. It would seem impossible to immunize animals against all of the variant serological types and, thus, if conditions favorable for the disease exist, some

type of the bacteria may be present to infect them.

SUMMARY

The clinical signs and pathological changes in goats during several outbreaks of pasteurellosis were comparable to those seen in sheep. Penicillin appeared to be the best therapeutic agent in these outbreaks.

In an outbreak that was thoroughly studied, one strain of *Pasteurella multocida* was isolated consistently from cases of caprine pneumonia. The cultural and serological characteristics of this strain were determined, and it did not fall into serological type I, II, or III for which typing serums were available. The prophylactic use of a commercial antiserum containing antibodies for types I, II, and III did not lower the incidence of infection in the goats. The outbreak may have been precipitated by a reduction in the natural resistance due to overcrowding, parasitism, and shipping.

Mouse-protection tests did not demonstrate protection from this antiserum or from another commercial antiserum containing antibodies for several strains identified by the zoological host method of classification when the isolated strain was used as the challenge. No protection was demonstrated in mice treated with a commercial bacterin containing antigens for types I, II, and III and a commercial aggressin prepared in horses by the use of the buffalo strain, but considerable protection was shown in mice treated with an autogenous bacterin.

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What Is Your Diagnosis?

Radiograph Offered for Your Study and Diagnosis

Because of the interest in veterinary radiology, the JOURNAL *publishes this month a case history and accompanying radiograph depicting a diagnostic problem which was submitted by Drs. A. Pailet and R. Wilcox, Holdenville, Okla.*

Our readers are invited to submit case histories, radiographs, and diagnoses of interesting cases which are suitable for publication.

Make your diagnosis from the picture below — then turn the page ▸

History.—A male, 6-year-old dog of the Setter type was known to have suffered from constipation for some time. The condition became acute when the dog consumed a considerable quantity of bones. With the aid of repeated enemas the large bowel was emptied. It was then filled by barium clysis and a radiograph was taken.

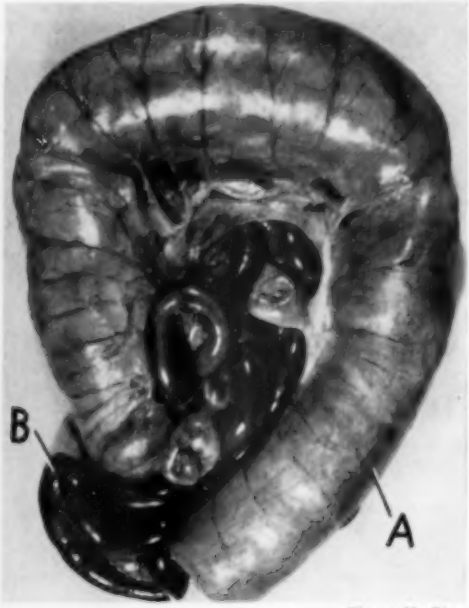
(Diagnosis and findings are reported on next page)

Here Is the Diagnosis

(Continued from preceding page)

The radiograph on the preceding page reveals megacolon. Megacolon is a congenital idiopathic dilatation of the colon. The condition is relatively rare and is thought to be caused by peristaltic deficiency or failure, resulting in fecal accumulations and impactions.

Fig. 1—Radiograph showing normal position and size of the colon and cecum.



—*Wayne H. Riser*

Fig. 2—Photograph of the intestines of a dog with megacolon: (A) the involved large intestine; (B) the gangrenous small intestine, caused by torsion of the mesenteric vessels. (This case was submitted by Dr. Jack Dinsmore, Glenview, Ill.)

Epizootiology of Leptospirosis *(Canicola)* in the Bovine and Other Species in Israel

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PRIOR TO 1952, several outbreaks of leptospirosis occurred among cattle and goats north of Tel Aviv, all (except for 1 calf, table 1) of which were caused by the *Leptospira grippotyphosa* serotype.[1]

During the following years, serious outbreaks have been observed in cattle herds south of Tel Aviv in which *Leptospira canicola* only was found as the causative organism. This finding was unexpected. With the exception of Starr,[2] who cultivated *L. canicola* from pigs, it has been mentioned in the literature as causing spontaneous infections in dogs and man only.

Since many animals do not show clinically detectable lesions after infection by Leptospira,[3] precise information on its spread must be acquired by means of serological investigation. Therefore, agglutination tests were made on the domestic animals which were kept on the places where *L. canicola* infection appeared in the cattle (table 1).

INCIDENCE OF LEPTOSPIROSIS (CANICOLA) ON FARMS

Cattle.—Four outbreaks occurred among cattle in June, 1949; in December, 1952; in May, 1953; and in February, 1954 (table 1). With the exception of a calf in June, 1949, the bovine leptospirosis which was common in Israel in 1949 to 1951 was caused by *L. grippotyphosa.*

Horses, Mules, and Donkeys.—Notwithstanding the fact that high agglutinin titers (2,000, 4,000, and 16,000) were obtained, none of these animals was clinically ill.

Dogs.—This species has universally been regarded as representing the only natural reservoir of *L. canicola.* With regard to epidemiology, therefore, special attention has been paid to this species. Routine examination of blood samples of dogs, mainly from the Tel Aviv district, revealed 46 per cent infection (table 2).

From the figures in tables 1 and 2 (30% and 46%, respectively) it may be concluded that the number of infected dogs on the farms where the cattle suffered from *L. canicola* infection was comparatively low. The history with regard to the dogs in these outbreaks deserves further attention:

1) In *kibbutz** Naan, when in June, 1949, a calf showed *canicola* infection, no dogs were present, 20 having been killed five months previously because of rabies in the area.

2) In the *kibbutz* Givat Brenner outbreak, the blood of 22 dogs owned by inhabitants of the settlement was examined in February, 1953. The dogs had had no contact with the cattle and 21 did not react to *L. canicola, Leptospira icterohaemorrhagiae* or *L. grippotyphosa.* Only the dog owned by the chief stableman reacted to *L. canicola* (strain Utr. HIV and naan) to a dilution of 1:1,000, and to *L. icterohaemorrhagiae* and *Leptospira hallum* to 1:200. When the owner returned from his work, this dog often licked his shoes. At the time the blood was examined, the dog had been sick for four or five days, was dull, had no appetite, and its conjunctivae were congested. When killed in the Veterinary Institute, necropsy revealed subacute interstitial nephritis and advanced fatty degeneration of the liver. Levaditi-stained sections of the kidneys showed large numbers of Leptospira and *L. canicola* was cultivated in Korthof's medium.

In later tests (not shown in table 1), a young dog of unknown origin which appeared in shed 2 in April, 1953, and had stayed with the calves for more than two months, reacted to *L. canicola* in dilution 1:8,000. From its urine, *L. canicola* was isolated. When destroyed, necropsy revealed severe acute focal interstitial nephritis and a large number of Leptospira organisms in the renal tubules. Also on June 30, 1953, when 17 of the 21 dogs which had not shown agglutinins in the February test were again tested, 1 had a serum titer of 1:200 and 5 a titer of 1:4,000 or more.

3) At Yazur, 2 dogs present in the infected yard did not react to *L. canicola.*

4) At Beth Dagon, positive serum reactions were observed in 5 of the 8 dogs present on the three neighboring farms (1, 2, and 3) in which 22 of the 40 cattle reacted. Also, on the 14 farms at various distances from those three farms, 7 of 11 dogs reacted to *L. canicola,* whereas only

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*Kibbutz designates a communal settlement.

3 out of 52 cows showed significant titers. Severe interstitial nephritis was found, and *L. canicola* was cultivated from the kidneys of the 2 reacting dogs on farm 1.

All the data did not provide sufficient epizootiological evidence to confirm the suspicion of dogs being an important source of infection for the cattle.

Special attention was then given to jackals which are present in great abundance and, at night, habitually enter the yards connected with the cow sheds.

On Feb. 17, 1953, in Givat Brenner, a freshly poisoned adult jackal was found in the vicinity of shed 2 and delivered to the Veterinary Institute. The blood from the heart agglutinated *L. canicola* at 1:1,000, whereas no agglutinins against other Leptospira serotypes were found. The kidneys showed capsular adhesions and hemorrhages. Infiltration and several small gray nodules were noticed between the cortex and pelvis. The tissues were not fresh enough to enable cultivation of Leptospira.

The question as to which antibody level must be considered significant for Leptospira infection in jackals was checked by the examination of a number of blood samples from other jackals found where leptospirosis did not occur in cattle. Out of 22 blood samples, ten from 2- to 5-month-old jackals from the zoo and 12 from adult jackals in the field, 1 adult showed a titer of 1:200 and a second a titer of 1:1,000. The remaining 20 had no agglutinins. In the vicinity of the place where the jackal with an agglutinin level of 1:1,000 was found, a stray dog had a serum titer of 1:64,000 against *L. canicola*.

Early in 1954, 5 jackal cubs, approximately 6 weeks old, were found in a nest in the orange grove of Givat Brenner. They were caught, and several weeks later their blood was examined. No Leptospira agglutinins were found.

In January, 1954, 3 adult jackals shot on two waste dumps at Givat Brenner were positive to *L. canicola* to a dilution of 1:16,000, 1:4,000, and 1:4,000, respectively. The necropsy report on jackal 1 stated:

> Macroscopically, the borderline between the cortex and marrow of the kidneys is indistinct. The cortex is widened, it has a red color with whitish patches and dots. The capsule adheres to the kidney and, on the surface, small scars and hemorrhages, in appearance like small nodules, are seen. Microscopically, the picture of most severe interstitial nephritis is shown; numerous areas of mononuclear and plasmacellular infiltrations, particularly around the glomeruli and tubules of the lower nephrons (distal convoluted tubules). Several of these are collapsed, showing no lumina. In a number of distal convoluted tubules, epithelial cells are destroyed. The glomeruli do not show deviations from the normal aspect. A few well-preserved Leptospira and much argentophylic debris are found within the tubules and tubular epithelial cells.

Jackal 2 showed similar macroscopic and microscopic pictures, while in jackal 3

TABLE 1—Blood Serum Tests with Leptospira Canicola on Infected Farms

Outbreak and year	Place	Heifers and calves		Adult cows		Horses		Mules and donkeys		Dogs		Cats		Man	
		+	−	+	−	+	−	+	−	+	−	+	−	+	−
1 (1949)	Naān	1*	...	...	...	...	...	...	...	...	...	...	...	...	...
2 (1952)	Givat Brenner	...	...	...	...	2	8	2	20	1*	21	...	...	...	27
	Givat Brenner, shed 1	...	...	1	139	...	...	...	...	...	...	...	...	...	...
	Givat Brenner, shed 2	25	47	...	...	...	...	...	...	...	...	...	...	...	...
	Givat Brenner, shed 3	127	59	...	...	...	...	...	...	...	...	...	...	...	...
3 (1953)	Yazur	1	1	2	8	...	...	...	...	...	2	...	...	...	...
4 (1954)	Beth Dagon, farm 1	1	4	9	8	2	...	...	...	2*	1	...	1	...	4
	Beth Dagon, farm 2	...	...	10	3	...	...	...	1	2	...	...	1	...	4
	Beth Dagon, farm 3	1	...	1	3	...	...	1	...	1	2	...	...	...	1
	5 farms near outbreaks 1, 2, and 3	...	...	3	23	...	...	...	...	5	3	...	...	...	3
	9 remote farms	...	...	...	26	...	...	...	...	2	1	...	...	...	...
Total		156	111	26	210	4	8	3	21	13	30	0	2	0	39
Percentage of titers of 1:200 or more		58.4		11.0		33.3		12.5		30.2		0		0	

− = titer of 0 or 1:20; + = titer of 1:200 or over. *Leptospira canicola isolated.

TABLE 2—Results of Canine Serum-Agglutination Tests with Leptospira Canicola

No. of dogs	Type	Negative	Positive	Percentage
40	Police	32−	8+	20
98	Army	35−	63+	64
81	Stray	41−	40+	49
97	Rural area	59−	38+	39
54	Urban area	21−	13+	38
Total of 350 dogs		188	162	46

changes in the kidneys were of a more moderate nature. From the kidneys of jackals 1 and 3, Leptospira strains of the *canicola* serotype were isolated in culture.

In the neighborhood of the infected cattle on farm 1, at Beth Dagon, 2 poisoned jackals were found in February, 1953. Blood from their hearts agglutinated *L. canicola* in dilutions of 1:100 and 1:200, respectively. A year later, on the same spot, a jackal showed a titer of 1:1,000.

In January, 1954, 4 jackals were brought to the Veterinary Institute from an adjacent area. One showed no agglutinins against Leptospira, the other 3 (A, B, and C) had titers of 1:200, 1:1,600, and 1:16,000, respectively.

The kidneys of jackal A showed no gross pathological changes but, in Levaditi-stained sections, large clumps of Leptospira were found in several of the tubules. From the kidneys and liver, *L. canicola* was isolated. The kidneys of jackal B were pallid and rigid, with many small yellowish white nodules in the cortex and the borderline between the cortex and medulla. Microscopic examination revealed small hemorrhages, wide-spread focal infiltration of the interstices, and large clumps of Leptospira in numerous convoluted tubules. In the renal cortex and urine from the bladder of jackal C, Leptospira were observed at dark-field examination. Acute focal interstitial nephritis and tubules packed with Leptospira were seen in histological sections. A strain of *L. canicola* was cultivated from the kidneys, liver, and urine.

EXPERIMENTAL INFECTIONS

Dogs.—Three dogs, 3 to 4 months of age, were twice inoculated, respectively, with drops in the eye, nostril, and mouth at an interval of five days with the primary culture of *L. canicola* isolated from the kidneys of a jackal.**

Agglutinins up to a titer of 1:4,000 appeared within two weeks. One dog became ill and died seventeen days after the last inoculation. The following day, the second dog became sick and, five days later, the third dog also. The last 2 dogs, when killed, showed early chronic nephritis and yielded *L. canicola* cultures from the kidneys, liver, and urine.

Jackals.—Two, 6- to 8-week-old jackals were inoculated, by drops in the conjunctival sac, with *L. canicola* culture recently isolated from a dog at Givat Brenner, and 1 jackal was additionally infected in the mouth and nostrils. Significant serotiters appeared and, though clinical symptoms of disease were not noticed, histological examination later revealed characteristic focal interstitial nephritis and Leptospira were found in the kidneys.

EPIZOOTIOLOGY

In three of the four places in Israel where *L. canicola* infections in cattle were encountered, no evidence existed to suggest that dogs had been the original source of infection. In one place no dogs were present, in another no agglutinins were found in the 2 dogs which were present and, in the third place, only 1 of the 22 dogs reacted and it showed recent infection three months after the epizootic had spread among the cattle.

Conversely, the presence of significant agglutinin titers for *L. canicola* (up to 1:16,000) in the blood of 8 out of 10 jackals caught in the vicinity of the infected sheds; the presence of interstitial nephritis; focal lesions in the liver; Leptospira in the organs of these jackals; and the isolation of *L. canicola* from their kidneys, liver, and urine, strongly suggest that this species has been the main reservoir from which the cattle originally contracted their infection.

The situation at Givat Brenner deserved special consideration. In sheds 2 and 3 (table 1), 59 per cent of the cattle reacted to *L. canicola*, whereas in shed 1 less than 1 per cent reacted. Sheds 2 and 3 were situated at one side of a narrow road which, at the other side, was bordered by large orange groves, the habitual dwelling place of jackals. Shed 1 was approximately 200 meters inside the *kibbutz*. Every night many jackals visited the vicinity of calf sheds 2 and 3 and several of them were seen in the yards connected with these sheds, while no jackals penetrated into the settlement as far as shed 1. A similar situation existed at Beth Dagon, where all infected cattle were found in farms at the outer border of the village.

After a great number of jackals in the Givat Brenner area had been destroyed by poison early in December, 1952, the rest abandoned the place. Nevertheless, the

**The number of Leptospira was small with an average of 1 to 5 organisms in every dark-field picture.

infection spread continuously during the following months. Therefore, it is probable that the infection in the calf sheds was started by contamination of the soil and food by the jackal's urine and, later, spread by the excretion of Leptospira in the urine of infected calves.

Our former investigations revealed that in *L. grippotyphosa* infections of cattle there was reason to assume that voles (*Microtus guentheri*) represented the natural reservoir of the pathogenic agent.[3] Cattle contaminated by the vole's urine shed the pathogens in their own urine, thus propagating the disease among other cattle. Probably similar epizootiological patterns occurred in the *L. canicola* infections described in this paper, the infection in the latter cases being transmitted to the cattle mainly by jackals and occasionally by dogs.

Under experimental conditions, a *L. canicola* strain isolated from a jackal proved to be highly virulent for young dogs. It is not unlikely that passage through the jackal increased the virulence for cattle. This might explain why *L. canicola* infection in cattle has not been observed hitherto in other countries. Contact infections were not observed in persons. In general, the pathogenicity of *L. canicola* for man is low. Yet, the virulence of Leptospira may vary considerably under natural conditions. Therefore, the presence of large reservoirs of *L. canicola* in dogs and jackals may be regarded as a potential public health hazard.

SUMMARY

1) In three of four outbreaks of *Leptospira canicola* infection in cattle, there was no evidence that dogs had acted as a primary source of infection.

2) In the vicinity of these places, several jackals proved to be carriers of *L. canicola*, showing interstitial nephritis and excretion of the organism in the urine.

3) Besides dogs in Israel, jackals are an important natural reservoir of *L. canicola*, representing a hazard to the health of man as well as of cattle.

4) A strain of *L. canicola* cultivated from a dog provoked only clinically inapparent infection in jackals, but interstitial nephritis and Leptospira in the kidneys were found on necropsy of these animals.

5) A culture of *L. canicola*, freshly isolated from the kidneys of a jackal and containing a small number of the organisms, provoked severe symptoms and death within twenty days after instillation into the nostrils or the conjunctival sacs of young dogs. Oral instillations caused severe acute nephritis within twenty-six days. Leptospira were cultivated from the kidneys, livers, and urine of these dogs.

6) On farms where many cows had high agglutinin levels against *L. canicola*, significant titers were also found in horses and in a donkey. Clinical symptoms were not observed in these animals.

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Two Children Die of Rabies.—The death of two children bitten by dogs about two months prior to illness was recently reported from Dallas, Texas. The dogs had been destroyed without observation or examination but the symptoms and clinical course in the victims was typical of rabies. Negri bodies were found in the brains of laboratory mice injected with saliva from one of the children.—*Weekly Rep., U. S. Department of Health, Education and Welfare, Oct. 2, 1954.*

Antibiotics and Candida Albicans.—*In vitro* studies with the fungus *Candida albicans* demonstrated that all levels of penicillin, aureomycin,® and terramycin® stimulated cell multiplication, the rate rising until the antibiotic concentration was 32 to 128 units per milliliter, then falling with further increases of the antibiotic.—*Vet. Bull., Sept., 1954.*

Shrew Poison Fatal to Some Animals

The tiny, short-tailed shrew, *Blarina brevicauda*, has glands under its jaw which secrete a poison lethal to mice, rabbits, and cats. Injection of minute quantities of the gland extract markedly affects respiration, pulse, and blood pressure. This poison is used by shrews when they attack mice.—*Sci. News Letter, Jan. 1, 1955.*

Lungworm Infection in Cats and Its Possible Treatment

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THE LUNGWORM of the domestic cat, *Aelurostrongylus abstrusus*, has been well known for over half a century but has seldom been reported in veterinary literature.

LITERATURE

The first report on the parasite is apparently that of Cameron[2] in 1926. In the areas in which it has been sought, such as the British Isles,[5, 7] Holland,[3] Palestine,[12, 13] and California,[14, 15] the incidence has been from 1 to 10 per cent of the cats checked. In the United States, it is reported to have been described first by Fry and Stewart.[11] Isolated cases have been reported from North Carolina,[17] Virginia,[11] Maryland,[10] Tennessee,[1] Texas,[1] New York,[1, 6] Georgia,[9] and South Carolina.[1]

DIAGNOSIS

Presumptive diagnosis of the parasite's presence is made by identification of the larvae (fig. 1) in the feces, along with signs of pulmonary pathological changes. Definite identification of the adult can only be made from autopsy material. The clinical course of the infection in cats is variable. Many times acute, subacute, and chronic stages are reported, although the presenting complaint would not suggest this parasite.

The pathological lesions seem to be mainly due to the development of the eggs in the alveoli with resultant occlusion and inflammation. Usually, the adult worms are nonpathogenic and the infection is not accompanied by eosinophilia. In heavy infections, the simultaneous deposition of a large number of eggs can produce acute symptoms and sudden death. In some cases, spontaneous recoveries are believed to occur. Up to this time, no specific therapy has been reported.

Although the life cycle has been reported in some of the previous articles, it may be of value to review it here.

The work of Hobmaier and Hobmaier[16, 18] postulated the life cycle, in brief, as follows: The larvae pass from the feces of the cat and infect one of several species of snails which then serves as the intermediate host. After a few weeks of development in the snail, the larvae reach the infective stage and, if ingested by the cat, or if the cat ingests an auxiliary host that has fed on the snail, such as frogs, birds, mice, etc., the cat is infected. In the definitive host, the larvae burrow through the mucosa of the esophagus or upper small intestine and, via the blood stream, reach the lungs. In the lungs, they pass three ecdyses and begin oviposition about four weeks after infection. Mönnig[16] reports that adult worms live in the smaller branches of the pulmonary artery where they lay their eggs. The eggs become arrested in the capillaries of the alveoli and develop there. The larvae, upon hatching, break out into the air passages which they ascend and thus pass out in the feces.

CASE REPORTS

The author's first clinical recognition of lungworm in cats came in the first of the following case histories.

Case 1.—A large, mature, black male cat, about 7 years old, was presented with a complaint of extensive eczema which had been chronic and progressive. The cat had also lost weight and decreased his activity. Examination of the cat revealed an extensive eczema (both moist and dry), thinness, generally poor condition, pale mucous membranes, temperature of 101 F., and slightly labored breathing. A laboratory

Fig. 1—Larvae of Aelurostrongylus abstrusus, the lungworm of cats. The larvae are approximately 0.36 mm. in length, about four to five times the diameter of an ascarid egg. x 200.

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examination showed: blood—r.b.c. 2,650,000, w.b.c. 18,000, 88 per cent neutrophils, 10 per cent lymphocytes, 1 per cent monocytes, 1 per cent eosinophils, and 50 per cent hemoglobin; urine—albumin +, indican +++, bile +, occasional casts and leukocytes. Fluoroscopy showed increased density of both lungs. Stool examination revealed a large number of a nematode larvae which, after research of the literature, proved to be characteristic of *A. abstrusus*, the lungworm of cats. However, for further confirmation, the fecal specimen was submitted to Dr. P. V. Gustafson* who cultured the larvae and confirmed it as *A. abstrusus* (*see* fig. 1).

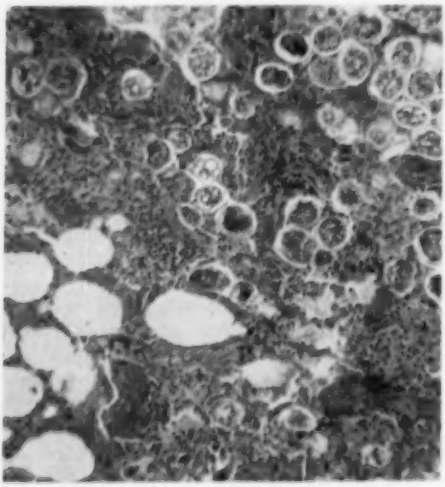

Fig. 2—Section of lung (case 1) almost completely occluded by eggs and larvae in different stages of development. x 80.

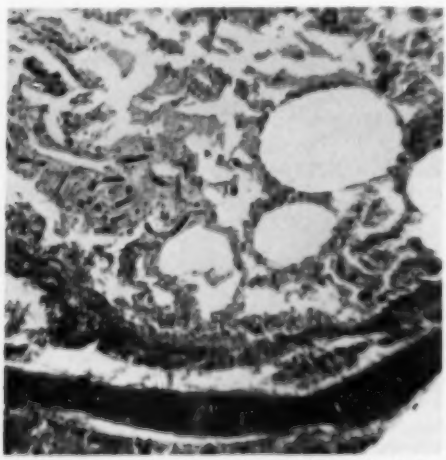

Fig. 3—Section of lung and bronchi (case 1). Notice inflammatory exudate and larvae, some of which are escaping up the bronchi. x 60.

As no specific treatment was known for the parasite, appropriate symptomatic treatment was instituted for the case as it had presented itself. The skin condition improved and, while there was some improvement in the general condition, it was only temporary as the pulmonary lesions continued to progress. Caricide® was tried for several days in dosages as recommended for filariasis, but adjusted to the weight of the cat. Stool checks made over several weeks showed no decrease in number of larvae. Dyspnea became increasingly worse so euthanasia was performed at the owner's request.

Upon autopsy, the lungs showed thickening and induration with minute encapsulated spots which were interspersed throughout. Microscopically, the section showed a surprisingly small portion of the tissue to be still functional. The bronchioles and alveoli were mostly filled with eggs and larvae in various stages of development, along with considerable inflammatory exudate (fig. 2). The bronchioles, especially, showed larvae which evidently were escaping and would show up in the feces (fig. 3). Evidence of considerable atelectasis and some emphysema was found. It was obvious here that these masses of eggs constituted one of the major factors in the pathological changes noted.

Case 2.—A 1-year-old male cat, previously a stray, when brought in by the owner because of severe dyspnea, had a temperature of 101 F. The animal was obviously acutely ill and in poor condition. As lungworm infection was suspected, a stool was checked and revealed numerous larvae typical of *A. abstrusus*. When the owner was informed of the diagnosis and prognosis, euthanasia was requested.

Autopsy revealed widespread bilateral involvement of the lung parenchyma, with a thick exudate throughout the bronchial tree. Larvae, numerous throughout the lung tissue and in the exudate, were identical with those from the feces. Sections showed

*Acknowledgment is made to Dr. P. V. Gustafson, microbacteriologist, University of Washington, for his help in identification of the parasite.

that relatively little of the alveoli were functional. Two adult males were dissected from the lungs, definitely confirming the diagnosis. The exact location of the adults was not determined.

Case 3.—Another stray cat, a 10-month-old male recently adopted by the owner, was brought in with severe dyspnea and a temperature of 102 F. The stool specimen showed larvae typical of lungworm. The owner decided against attempting treatment, and euthanasia was performed.

Autopsy showed lesions similar to the former 2 cases of lungworm infection.

Case 4.—A 3-year-old male Siamese was presented because of a cough of several months' duration and a gradual loss of weight despite a good appetite. Examination revealed a normal temperature, increased respiration, r.b.c. 3,200,000, w.b.c. 14,000, and both ascarid eggs and numerous lungworm larvae in the stool. Fluoroscopy showed increased denseness in the lungs. Upon diagnosis of lungworm infection, the owner was advised as to the lack of specific treatment but, as the cat was a highly valued family pet, they requested that everything possible be done.

Treatment consisted of the use of a triple sulfonamide every four hours (eupro-camph injectable**) and 100 mg. of caricide given every other day for six days. Liver, vitamin B complex, and vitamin B_{12} also were given, and the diet was improved.

The cough was controlled but the cat showed little other actual improvement. About five days after the sulfonamide was discontinued, the cough returned. The stool examination revealed no ascarid eggs, but showed no decrease in the number of lungworm larvae. No treatment was given for one week at the end of which the cat showed no improvement over its condition when it was submitted.

Previous to this time, spraying an iodine solution directly into the trachea, as in the treatment for sheep lungworm, was considered but was put off as a last resort. A 20 per cent sodium iodide solution, 2.5 cc. intravenously, which the author had used frequently as an aid in the treatment of advanced ringworm in cats, resulted in a surprisingly rapid improvement in the cat's condition. In twenty-four hours, the cough improved and by the fifth day the improvement in the general condition was apparent and the cough had stopped. The stool showed only occasional lungworm larvae. Two more injections were given at five-day intervals, at the end of which time the cat showed an excellent return to weight and health. Three days after the last injection, no larvae were found in the stool. Checks made three and five months later showed no recurrence and the cat remained in excellent condition.

Cases 5 and 6.—The fifth and sixth cases (a 2-year-old female and a 2½-year-old male, respectively) paralleled the fourth almost exactly in symptoms, treatment, and response. In the fifth and sixth cases, however, no caricide was used and intravenous sodium iodide, 20 per cent, was started as soon as the diagnosis was confirmed from the stool specimens.

**Breon's respiratory decongestant now discontinued.

DISCUSSION

After making a positive identification of *A. abstrusus*, the feline lungworm, the author realizes in retrospect that he must have seen this condition several times before in various degrees in the Seattle area. On occasion, larvae of this type had been seen in the stool check, but the etiological cause of lungworm had been missed. It might be suspected that the average small animal veterinarian sees this in his practice more than is realized.

Of interest is that 3 of the 6 cats presented had been strays and consequently had to forage for their food, thus increasing the likelihood of their picking up the parasite.

Though, at the time this paper was written, the treatment had been used on only 3 cats, the results appeared to be so dramatic that it was felt to be of value to make this report so that this type of treatment might be tested further. In view of these apparent results and the proved value of iodine treatment for lungworm in sheep, it may be hoped that the use of intravenous sodium iodide offers excellent encouragement in the treatment of lungworm in cats.

SUMMARY

1) *Aelurostrongylus abstrusus*, the lungworm of cats, is reported from the vicinity of Seattle, Wash. The parasite was identified by larvae, pathological lesions, and the recovery of the adult male.

2) Details of diagnosis, pathology, and life cycle are reviewed.

3) Caricide, which has been used successfully against filaria, did not prove effective in treatment of feline lungworms.

4) A new type of therapy was tried with apparent success.

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Therapy for Bracken Poisoning in Cattle

Cattle clinically affected by bracken poisoning develop a severe leukopenia and thrombocytopenia. It has been suggested that an examination of the blood of all animals in the affected herd might make it possible to treat or market those in early stages before signs of illness appeared. When, in September, 1953, 2 heifers died with bracken poisoning, a blood analysis on the 23 remaining cattle showed 12 with fewer than 5,500 leukocytes per cubic millimeter. The 12 received 200 mg. of nicotinamide followed by 150 mg. daily for four days. Six developed no signs of illness but 5 later developed typical bracken poisoning and another became ill but without a fever. As signs of illness were observed, they were given more nicotinamide in doses from 300 to 1,200 mg. each, repeated as indicated. Five recovered after two to five days but 1 died after receiving 4,500 mg. in eleven days. None of the other 11 became ill. In three other herds, 3 of 4 heifers recovered when treated with 100 mg. of vitamin K daily. One of these also received a blood transfusion.—*Vet. Rec., Nov. 13, 1954.*

Bracken Fern Poisoning in California

In the summer of 1954, 10 of 200 cattle died of bracken fern poisoning in an area near San Diego where the plant grows abundantly. Necropsies on 2 cows revealed typical lesions, while bacterial cultures were negative for 1 but yielded *Pasteurella multocida* from the other. This organism proved nonpathogenic to test animals.—*Ann. Rep., San Diego (Calif.) County Livestock Dept., 1953-1954.*

Castor Bean Poisoning in Horses.—Five horses, when placed in a corral where they ate tall castor bean plants, became ill with identical symptoms, then died. Necropay of 1 revealed a severe gastroenteritis. Unexposed horses in other corrals remained healthy.—*Ann. Rep. San Diego (Calif.) Livestock Dept., 1953-1954.*

Male snakes wrestle violently when competing for a mate. They attempt to strangle each other.—*Sci. News Letter, July 10, 1954.*

The Therapeutic Effect of Streptomycin on Infectious Coryza of Chickens Caused by *Hemophilus Gallinarum* IV. Clinical Results Observed in the Field

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THE LITERATURE from 1910 to 1949 on the treatment of infectious coryza in chickens has been reviewed by Coronel *et al.*,[3] except for Wernicoff and Goldhaft's report[10] on the use of sulfathiazole. Since the first paper of this series,[1] which cites only two studies on the use of streptomycin against infectious coryza, a number of additional references have come to our attention. Because these investigations were conducted in different and distant parts of the world (*i.e.*, Philippines,[3] Puerto Rico,[9] Holland,[4] and Italy[7]), and since their results were mostly published in journals of relatively limited distribution, the literature available to us on the treatment of avian infectious coryza with streptomycin will be reviewed briefly.

REVIEW OF LITERATURE

The first study to be published on this subject was the report of De Blieck,[4,5] and his trials provided the foundation for our present paper. He was working with a coryza of slow onset and long duration, the causal organism of which formerly was defined as "coccobacilliform bodies" (Nelson) and might today be called "pleuropneumonia-like organisms." Of 13 birds treated, those injected with 0.2 or 0.15 Gm. of streptomycin recovered completely within two or three days, while 0.1 Gm. proved an inadequate dosage, except for 1, 10-week-old bird.

Coronel and co-workers[3] do not describe the causative organism of their cases of coryza. Their minimal effective dosage of streptomycin was 5 to 6 injections once daily of 0.03 to 0.05 Gm. According to our previous papers[1,2] the above doses are too low for bactericidal action on *Hemophilus gallinarum*, and it is important to note that in their trials the percentage of recurrence or reinfection (8 to 30 days after treatment) reached 20 per cent.

Rivera-Anaya *et al.*[9] evaluated the possibilities of streptomycin as a treatment for coryza in a series of six trials involving 888 cockerels and pullets which showed clinical symptoms of coryza (*H. gallinarum*). Intramuscular injections proved much more effective than the subcutaneous route. In the last trial, 697 young birds were injected with 0.1 Gm. of dihydrostreptomycin sulfate intramuscularly, with an apparent recovery of 663 birds after three days and of 675 birds (97%) after six days.

In Italy, Galli[7] worked with a flock infected with *H. gallinarum*. After obtaining disappointing results with sulfonamides, the birds were injected intramuscularly with 0.1 to 0.2 Gm. of dihydrostreptomycin sulfate. After 48 to 96 hours, all treated chickens had recovered, while the controls continued to be ill.

In addition to the above research papers, we know of two short, popular notes on this subject. Pulgar[8] of the Dominican Republic describes "the marvel of streptomycin," and Franco[6] of Portugal highly praises the results he obtained; both used 0.1 Gm. of streptomycin intramuscularly.

CLINICAL RESULTS

Results Obtained Before Streptomycin Became Treatment of Choice.—The history of infectious coryza, and the treatment against it, in the village Ramot Hashavim can be taken as typical for the development of this disease in Israel as a whole. In an area of less than 1,000 acres, there is an average of 60,000 laying chickens (plus the unsexed chicks for their 4/5 replacement) belonging to about 60 families.

During 1939, about 5 per cent of the farms in this village became infected with coryza which during two years was not recognized as such but was assumed to be avitaminosis A or just plain "colds." During 1945, when about 50 per cent of the farms were infected, sulfathiazole became available and was the treatment of choice. Nevertheless, the disease continued its spread, and by 1953 all the farms were infected.

By the time the real nature of the disorder was understood, the simultaneous depopulation of a large number of farms had almost become an organizational impossibility, coupled with little chance of

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success due the general contamination of the entire district.

After 1945, sulfathiazole was relied upon, applied at the rate of 1.0 Gm. daily per bird for three consecutive days, either mixed into the laying mash or sometimes as the sodium salt administered as 0.3 per cent of the drinking water. Results were variable: In about 5 per cent of the cases, there was a complete disappearance of the disorder for about three to four months; in as many as 10 per cent, no improvement; and in most cases there was a decided but only temporary improvement of the flock for a limited period of about four to eight weeks. After that interval, sick birds would appear again, resulting in culling at least 10 per cent, and in exceptional instances 50 per cent of the flock. In all cases, there was a cessation of egg production (for a minimum of 3 weeks and an average of 4 weeks) following the above treatment with sulfathiazole. Consequently, many poultrymen stopped giving sulfonamides to their layers, using rigorous culling instead. In 1948, sulfamezathine became available; however, results were more variable and as a whole, decidedly poorer than with sulfathiazole.

No farm in Ramot Hashavim on which infectious coryza had been diagnosed once was able to free itself from this disorder. In this respect, the sulfonamides were no help whatsoever because of the remaining "healthy carriers."

Recoveries of Chickens Following Injections with Streptomycin.—During February, 1952, the first local trial with streptomycin was initiated.* The 13 chickens chosen for the test were severely affected with infectious coryza, yet in the 5 which received 0.2 Gm. of streptomycin, some improvement was noticeable the next day, and there was complete clinical recovery after three days. Those birds which received only 0.15 Gm. of this antibiotic showed a decided improvement as well, but not in as striking a manner as in the former ones, and in 3 of these 8 chickens there remained a nasal discharge.

These results were encouraging and resembled those obtained by De Blieck,[4,5] on whose work this trial was based. Consequently, a second test was undertaken with 23, 9-month-old hens and 3 breeding roosters. These birds had been culled by their owner and were intended for slaughter because they were sick and had lost weight. In spite of their bad condition, they made a remarkable and quick recovery when treated with intramuscular injections of streptomycin (0.2 Gm. per bird): of 23 hens, 13 started to lay within thirteen days; 3 additional birds made a complete clinical recovery; in 4, a greatly diminished nasal secretion continued; and only 3 hens had to be culled (1 of these apparently due to internal laying). All 3 roosters made an uneventful recovery and were returned to their breeding flock.

The above results, plus the experience acquired since then, permit the following generalizations: (1) one day after the injection of streptomycin there is a definite, and often striking, improvement in the color of the comb and head and in the brightness of the eyes, the birds seem much livelier, and the appetite increases; and (2) on the third day the flock as a whole looks healthy, with only a few birds still exhibiting a nasal discharge. Facial edema, when present, usually disappears within one week, but if the wattles have reached a stage in which their swelling is due to dried and hardened exudate, no resolution takes place.

Economically, even more important than this quick clinical recovery is the fact that, although approximately 60,000 chickens (about 300 flocks) have been treated up to now in Ramot Hashavim in this manner, no recurrence on a flock basis has been observed. In the worst case, a few infected birds appeared in the treated flock during the rest of the year.

Dosage and Schedule of Injections.—The first trial had indicated that any decrease in the dosage of streptomycin was reflected in less satisfactory results. This fact has been substantiated on a larger scale by unsatisfactory experience with two sizable flocks. During the period of the first hesitating trials with streptomycin on ever increasing scale, two flock owners tried lower doses on pullets about 4 months old. In one case, a flock of 100 birds was treated with injections of 0.125 Gm. per pullet, and in the other one with a dose of 0.167 Gm. per bird. Results both times were disappointing; however, according to some poultrymen, at times the latter dosage is adequate in young

*These first experiments were conducted under the supervision of Dr. J. Cohana, veterinarian for poultry diseases of that district.

growing stock. This problem of minimal dosage, and the potential danger of producing streptomycin-fast strains of *H. gallinarum* due to inadequate doses have been dealt with in a previous paper.[3]

By trial and error, the following schedule of injections was evolved for conditions prevailing at Ramot Hashavim: All birds in a given pen are injected intramuscularly with 0.2 Gm. of streptomycin each when about 10 to 20 per cent of them are infected with coryza (approximately 3 to 5 days after the first signs of the infection have appeared); a second injection is administered, this time to the sick birds only, four to five days after the first one. During 1953, the number of chickens thus receiving a second dose was roughly 10 per cent of the flock; in 1954, the percentage was markedly lower. In 1953, in most of the cases a third screening after an additional five days was made and again all sick birds (about 2% of the flock) were treated; in 1954, only a few sick chickens remained after the second treatment, and these were culled.

The situation is different in laying batteries, where strict daily individual supervision is feasible. In this case only sick birds are treated, and that, immediately when they show the first symptoms of infection. In this manner, any loss of egg production can be prevented, as has been proved in a battery-shed holding 700 laying pullets and 800 birds just about to start production. Apparently due to less contact among caged chickens, the coryza took almost ten weeks to spread through the flocks. Forty per cent of the chickens had to be treated after they exhibited the first symptoms, and about 7 birds had to be culled because the infection persisted even after the second injection. Yet, in spite of the fact that it was easily discernible how the coryza spread along the battery rows (and occasionally by erratic jumps), flock production never fell below 60 per cent.

Effect of Streptomycin Injections on Egg Production.—The first indications that this antibiotic had a remarkable effect on egg production were obtained from the second trial performed in this country (*see* above description). Of 23 culls which had been treated, 13 returned to production within thirteen days, at the following rate after the treatment: 4 birds on the fourth day; 2 on the fifth day; 2 on the sixth day; 1 on the seventh day; and 4 on the eighth to thirteenth day.

Such a productive response exceeded all expectations and, even before this test was finished, it was decided to extend this experiment to the rest of the flock from which the above 23 birds had been culled. This flock, a June (1951) hatch, consisted of 320 pullets when it started laying in November, but by March, 1952, only 227 chickens were producing, and only at a low level (30 to 35%). Two weeks after the treatment, egg production had almost doubled (60 to 65%) as compared to the egg yield before, and though the flock had been in poor condition, only 13 of 227 birds were culled during March. During April and May, 21 and 12 chickens, respectively, were culled, and production up to the end of May ranged from 60 to 65 per cent.

The above experiment was the first indication in this country of what one treatment of streptomycin can do for a flock of layers of low productivity due to infectious coryza. After the first few trials, poultrymen quickly became accustomed to the "miracle": flocks suffering from long-standing coryza (due to lack of treatment or unsuccessful use of sulfonamides) and with a production as low as 20 to 30 per cent would begin a steep increase in their egg yield about one week after the treatment with streptomycin, and within another week they would reach a production of 50 per cent. Frequently, even 60 per cent was reached, a level which was considered high at that time for a locality contaminated with coryza, and, not less important, once an acceptable production had been attained, it remained steady for months.

Today, streptomycin has become the accepted treatment against infectious coryza, and poultrymen resort to it before the disease is able to depress production by more than 10 to 20 per cent (depending on their alertness).

Streptomycin in Breeding Roosters.—The job of raising breeding roosters cooperatively at Ramot Hashavim was entrusted to the best farms of the village, and the latter would distribute the males among the various farms containing breeding flocks. The usual result was that within a few days to three weeks after their introduction into the respective flocks, these roosters became severely infected with

coryza, even if the flock had apparently been healthy. A combined culling and mortality of up to 50 per cent among these roosters within the first six to eight weeks in the flock was frequent. The treatment with sulfathiazole gave variable results and necessitated individual administration of tablets for several days.

During the last two seasons, there has been a substantial saving in breeding roosters due to the treatment with streptomycin. When the first of the roosters in a pen develops symptoms of infectious coryza (usually shortly after addition to the flock), all male birds of this pen are immediately given an injection of the drug, and usually after that there are no more losses among them except for the normal culling. This treatment with streptomycin has brought about a saving of about 800 roosters annually for the village.

Effect of Streptomycin on Growing Stock with Coryza.—In contrast to laying chickens, the yardstick for the improvement of young birds following treatment with streptomycin is restricted to items which are difficult to measure and express in figures on commercial farms. In general, it can be stated that within forty-eight hours the usual uneventful clinical recovery occurs, color returns to the heads, and feed consumption increases. Within a few days, the birds which have been at a stand-still, due to the disease, begin to develop physically and sexually.

Again, as in the case of laying chickens, streptomycin seems to exert a double-barreled action, causing clinical recovery on one hand and simultaneously "pushing" the improvement of the young stock at a rate which can not be explained solely on the basis of recovery from the disease. In an experiment conducted by Dr. A. Bickels (Poultry Field Laboratory, Haifa), the group of sick, and later treated, pullets (8 weeks of age) made the best average gains (59%) and weighed more on the average (865 Gm.) eighteen days after the treatment than the healthy and untreated controls. The latter had been the heaviest birds to begin with (550 Gm.) but gained only 44 per cent during the same period, reaching an average weight of 792 Gm. The controls which had become infected in the meanwhile lost 10 per cent of their weight. These results seem to indicate that the injection of streptomycin, in addition to compensating for the previous reduced development due to the disease, even stimulates growth beyond that of normal birds.

Data of the first paper of this series,[1] as well as those of the previous one,[2] indicate that even growing stock should not be treated with a lesser dose than 0.2 Gm. of streptomycin per bird, because inadequate doses are ineffective and, moreover, are liable to develop streptomycin-fast strains of *H. gallinarum*. At least in one case field experience has substantiated the above warning of ineffectiveness based on laboratory tests. On the first visit to the above-mentioned pullets, only 140 sick ones were treated; of these, 100 birds were injected with 0.2 Gm. each and 40 birds with only 0.1 Gm. Three days later, all those having received the larger dose showed full clinical recovery, while among the 40 birds treated with the smaller dose there were enough sick birds left to induce immediate re-treatment of the entire group with the full dosage of 0.2 Gm. each.

Undesirable Effects of Streptomycin in Chickens.—Although in the vast majority of cases this antibiotic gives excellent results, justly causing Pulgar[3] to write about the "marvel of streptomycin," there are birds which are particularly sensitive to this antibiotic. In many cases, this appears to be especially true among young and weak chickens, in which the recommended dose of 0.2 Gm. of streptomycin per bird is liable to cause a rather high percentage of "shock."

For instance, in the flock described in the previous two paragraphs, when 592, 8-week-old birds were injected with a dosage of 0.2 Gm. each, 38 "fainted" almost immediately after the injection and, of these, 16 died quickly, while 22 birds recovered after two to three hours. There seems to be a correlation between the condition of the young stock and the percentage which react. Thus the experience at Ramot Hashavim, with treating growing stock beginning with the age of 7 weeks, has been much more promising than the above example, perhaps due to the better management and stricter culling procedures used on these farms.

It should be remembered that adult chickens, too, may "faint," or even die, as a consequence of these injections; however, the percentage is small, possibly 1 in 1,000.

SUMMARY

The literature on the treatment of avian infectious coryza with streptomycin has been reviewed briefly.

Following intramuscular injections of 0.2 Gm. of streptomycin, adult chickens make a quick recovery from infectious coryza, that is, after twenty-four hours there is a definite improvement in the appearance and behavior of the birds and by the third day the flock as a whole looks healthy.

In contrast to the depressing effect of sulfonamides, streptomycin actively stimulates egg production, which starts a steep increase about four to ten days after the injection and may reach levels higher than before the outbreak of the disease.

The use of streptomycin in breeding roosters after their addition to flocks containing coryza carriers has brought about a saving of almost half of their number.

In growing stock, injections of streptomycin cause uneventful recovery from the disease plus quick active stimulation of appetite, gain in weight, and sexual development. Very young or weak birds may "faint" or even die of shock minutes after the injection.

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New Light on Tuberculin Reaction.—The characteristic reaction to the intradermal tuberculin test occurs when the antibodies borne by the lymph cells combine with the antigen at the site of injection. The tuberculin becomes fixed in the local tissues and the delay in reaction is probably due to the time required for the lymphocytes to reach the area.—*TB M. News, Jan., 1955.*

Hyaluronidase in Renal Lithiasis.—In a 1952 report, hyaluronidase therapy resulted in no new stone formation in 19 of 24 patients, no increase in size of the existing stones, and in four patients the size diminished. In this report, only three of eight patients showed no new stone formation, four showed an increase in size of the calculi, and in none was there any diminution in size. In only one patient was there any relief from symptoms.—*Proc. Royal Soc. Med., Sept., 1954.*

Hypervitaminosis and Brain Lesions

When adult guinea pigs on a diet including green vegetables were given *per os* 300 to 600 I.U. of synthetic vitamin A per gram of body weight daily, for ten to seventeen days, they showed a loss of weight and hair, and also weakness and anorexia. Later they developed an uncertain gait, spastic paresis and rigidity, with marked curvature of the vertebral column. Several microscopic lesions were found in the cortex of the cerebrum and cerebellum and in the mesencephalon, pons, and thalamus.—*Vet. Bull., Nov., 1954.*

Differentiating Sheep and Goat Carcasses.—When the scapula is available, the carcass of a sheep may be distinguished from that of a goat by the acromion, the pointed projection at the bottom of the scapular spine. It is present in the goat but absent in the sheep.—*Vet. Bull., Nov., 1954.*

Treatment of Canine Whipworms (*Trichuris Vulpis*) with Whipcide

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IN MY PRACTICE in the Indianapolis area, which is exclusively a small animal house call practice, the majority of the saturated sodium nitrate flotation fecal examinations conducted on adult dogs contain whipworm ova. A check of 155 tests from cases of this type revealed that 89 (57.4%) of the samples contained whipworm ova. In the past, I usually ignored this parasite infection except in those dogs that showed clinical evidence of "whipworm disease." Those animals having diarrhea, chronic emaciation, and excessive nervousness associated with whipworm infection were treated with N-butyl chloride at the rate of 1 cc. per 3 lb. of body weight. These dogs were held off feed for twenty-four hours prior to treatment, and the anthelmintic was administered orally. This therapy will, in many instances, eliminate the clinical symptoms for a few days but invariably evidence of diarrhea or nervousness recurs. In more than 90 per cent of the treated cases, the ova count did not become negative although the count was usually somewhat reduced. The treatment itself has been unwieldy in my practice because of the large dosage required.

Recently, I tested an experimental whipworm anthelmintic tablet, whipcide.* The active ingredient of the tablet, phthalofyne (3-methyl-1-pentyn-3-yl sodium phthalate), was discovered by Ehrenford.[1,2] Clinical reports have indicated this drug to be effective, convenient, and safe.[3-5]

This paper reports the results of whipcide treatment in 38 dogs. Except in 2 cases, all dogs received a two-dose treatment, which consisted of 200 mg. of the drug per kilogram of body weight, administered morning and night immediately following one half the regular meal.

The clinical study included a kennel of 13 dogs (table 1) which had a serious problem with whipworms and 15 individual animals (table 2).

COMMENT

The two-dose method of treatment eliminates fasting prior to administration of the drug. A dose of the drug (200 mg./kg.) was given immediately following a light meal both morning and night, so that a total dose of 400 mg./kg. was used. A recommendation to feed approximately half the usual daily ration was made to the owners. This program has been ideal from the owner acceptance standpoint because many owners resent any type of treatment that requires withholding food from their pets. Magrane[4] used a treatment program which necessitated fasting the dog prior to

TABLE 1—Results of Whipcide Therapy in Kennel of 13 Dogs

Case (No.)	Breed	Wt. (lb.)	Initial ova count	Observations
1	Cairn Terrier	12	Heavy	Ova count remained negative until 4 months postdose, negative again after 2nd treatment until present (2 mo.).
2	Cairn Terrier	13½	Heavy	Same as case 1.
3	West Highland Terrier	15	Medium	Same as case 1.
4	Scottish Terrier	15	Medium	Negative 60 days postdose.
5	West Highland Terrier	15	Medium	Negative 5 months postdose.
6	West Highland Terrier	14	Light	Ova count remained negative until 5 months postdose, again negative after 2nd treatment (1 mo.).
7	Scottish Terrier	16	Heavy	Ova count positive on re-examination 30 days postdose, re-treated, negative to present (2 mo.).
8	Scottish Terrier	14	Heavy	Ova count negative 90 days postdose.
9	West Highland Terrier	12½	Medium	Ova count negative 30 days postdose.
10	Scottish Terrier	15	Medium	Ova count negative 30 days postdose.
11	Scottish Terrier	16	Light	Ova count negative 30 days postdose.
12	Scottish Terrier	15	Medium	Ova count negative 30 days postdose.
13	Cairn Terrier	11	Heavy	Ova count negative 30 days postdose.

From the Pitman-Moore Co., Indianapolis, Ind.

*Whipcide is a trademarked product of Pitman-Moore Co., Indianapolis, Ind.

administering a single 250-mg./kg. dose of the drug.

No evidence of toxicity was encountered in the animals I treated, except that 3 dogs did vomit following medication. Follow-up flotation fecal tests were conducted routinely on the treated dogs on the tenth post-treatment day, and then every thirty days thereafter whenever possible. The client was instructed when to bring the specimen.

TABLE 2—Results of Whipcide Therapy in 15 Dogs

Case (No.)	Breed	Wt. (lb.)	Symptoms	Initial ova count	Observations
1	Beagle	17	Severe hemorrhagic diarrhea	Heavy, also hookworms	Treated with vermiplex*, then dosed with whipcide 7 days later. Whipworm ova count negative 70 days postdose (3rd neg. test).
2	Beagle	12	Severe hemorrhagic mucoid diarrhea	Heavy, also hookworms	Same as case 1.
3	Miniature Schnauzer	6	Intermittent diarrhea	Heavy	Negative for whipworm ova 40 days postdose (2nd neg. test).
4	Boston Terrier	20	Persistent diarrhea, 6 mo. duration	Heavy	Negative for whipworm ova 70 days postdose. Stool became formed 2nd day after treatment.
5	Boston Terrier	20	None	Heavy	Negative for whipworm ova 70 days postdose. Cohabitant with case 4.
6	Scottish Terrier	20	Diarrhea	Medium	Dog vomited evening dose, stool still positive for whipworm ova in 60 days; re-treated, retained medication. Negative for whipworm ova 70 days postdose.
7	Pointer	55	None	Light, also hookworms	Same as case 1.
8	Beagle	19	Diarrhea	Heavy	Negative for whipworm ova 47 days postdose, diarrhea eliminated. Received vermiplex treatment also.
9	Boxer	52	Diarrhea	Medium	Negative for whipworm ova 40 days postdose, diarrhea eliminated.
10	Fox Terrier	20	None	Medium	Negative for whipworm ova 40 days postdose.
11	Boston Terrier	11	Diarrhea	Heavy	Negative for whipworm ova 74 days postdose. Treated with vermiplex to remove tapeworms. Diarrhea eliminated.
12	Newfoundland	110	Copious amt. of black tarry diarrhea	Medium	Negative for whipworm ova 40 days after treatment, stool returned to normal.
13	Boxer	40	Intermittent diarrhea	Medium	Negative for whipworm ova 40 days postdose, diarrhea eliminated.
14	Cairn Terrier	17	Chronic mucoid diarrhea with occasional constipation, severe attacks of abdominal distention from gas, depression	Heavy 2/17/53	2/24/53—treated with one 250-mg./kg. dose following fasting, emesis occurred; 4/22/53—fecal exam. negative for ova; 5/13/53—fecal exam. moderate ova count; 5/14/53—re-treated using 2-dose method, emesis 1 hr. postdose, postdosing fecal test moderate; 10/5/53—heavy ova count, intermittent diarrhea; 6/15/54—very sick, depressed, anorexia, distended abdomen, mucoid diarrhea; owner believed dog ready to die; ova count heavy, given 2-dose treatment, slight emesis 2 hr. after 2nd dose; postdose fecal exam. negative to present (30 days). Dog has made spectacular recovery.
15	Cairn Terrier kennel mate to above dog	12½	Intermittent diarrhea	Medium 2/17/53	2/24/53—treated with one 250-mg./kg. dose following fasting, emesis occurred; 4/22/53—fecal exam. negative for ova; 5/13/53—light ova count; 5/14/53—re-treated using 2-dose method, postdosing test negative. 10/5/53—heavy ova count, intermittent diarrhea; 6/15/54—again had mucoid stools, fecal test heavy for ova; re-treated with 2-dose method; postdosing fecal test negative to present (30 days); stools normal.

*Vermiplex is a trademarked product of Pitman-Moore Co., Indianapolis, Ind.

Two owners have mentioned that a "skunklike" or "garlic-like" odor was noted following dosing.

The runs of the kennel (table 1) were treated with sodium borate, according to the manufacturer's directions, with the hope of destroying whipworm ova and thus preventing reinfestation. After seven months on the sodium borate program, there was no change in the recurrence of whipworm ova in stools of dogs, indicating that this program is not effective against the ova of this particular parasite.

Dogs 14 and 15 were particularly interesting since these 8- and 9-year-old Cairn Terriers were exercised on the same grassy area for several years along with an aged mongrel dog. Repeated flotation examinations of the mongrel's stools were always negative for whipworm ova. Since it is likely that the reinfection which readily occurs in the Cairns is from the contaminated exercise yard, one would expect the mongrel to also exhibit signs of whipworm infection. Perhaps this is an example of immunity to the parasite.

Seven months after the last negative fecal check on dog 5 (table 2), it had the following symptoms: depression, poor appetite, abdominal distention, and mucoid diarrhea. Clinical examination under anesthesia revealed an impaction posterior to the ileocecal valve. By using a long forceps, we determined the cause of the blockage to be due to a mass of whipworms and feces. The major portion of the obstruction was removed with the forceps and whipcide was dispensed for use on the following day. Recovery was uneventful, and the owner was cautioned that additional anthelmintic treatment would probably be necessary in a few months. This is the first time I have encountered this condition and I do not recall a similar case being reported in the literature. Smith[6] reported on 2 fatalities due to whipworms in the dog.

In those dogs with other internal parasites, besides whipworms, vermiplex was administered a week after the whipcide treatment and repeated a week later. This program was effective in eliminating mixed intestinal parasite infections.

SUMMARY

Results obtained when 38 dogs were treated with whipcide, 200 mg. per kilogram of body weight, indicate that this drug is an effective, safe, and convenient treatment for dogs infected with whipworms.

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Postmortem Examinations of Chinchillas

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The past two years has seen the chinchilla industry expand from a small unit operation into a branch of the fur farming industry that now houses and cares for many animals on large ranches. In view of this fact, additional statistics relative to the predominating causes of death in this animal will be of use to those veterinarians who are called upon to advise and consult with these ranchers.

In 1953,[1] this laboratory published the results of 1,005 autopsies performed on this animal up to June 20, 1949. Since that time, the laboratory has performed 1,000 additional autopsies prior to May 3, 1952. The distribution according to general diagnosis and age are given in table 1.

Summary.—In view of the additional statistical data (table 1), it still appears that diseases of the lungs and intestines are predominant in the chinchilla. Therefore, attention must be given to diet and housing conditions, if the over-all death rate is to be reduced further. The variance of diets among most ranches and individual

From the Brenon Laboratory, Inglewood, Calif.

[1]Brenon, H. C.: Postmortem Examinations of Chinchillas. J.A.V.M.A., *123*, (1953): 310.

TABLE I—Diseases Diagnosed in Chinchillas Which Were Autopsied Between June 21, 1949, and May 3, 1952

	Total deaths from*	Age (years)									
		Less than 6 mo.	1	2	3	4	5	6	7/8	9+	Not known
Total autopsied	1,000	191	257	151	77	45	15	5	10	9	240
Enteritis	242	53	65	36	19	12	2	3	1	1	50
Pneumonia	225	54	46	31	9	11	2	0	2	2	66
Impaction	208	35	48	29	16	8	4	1	2	1	64
Toxic enteritis	107	19	42	19	9	3	2	0	1	2	11
Prolapse	36	4	8	3	5	1	0	0	0	1	14
Colitis	27	3	11	6	1	1	0	1	1	0	3
Pneumonitis	16	3	4	2	2	0	0	0	0	0	5
Bloat	15	4	4	2	2	0	0	0	0	0	3
Nephritis	14	4	2	2	0	1	0	0	1	1	3
Traumatic	14	3	4	4	1	0	1	0	0	0	1
Poisoning	12	1	5	1	3	1	0	0	0	0	1
Peritonitis	11	1	4	4	1	0	1	0	0	0	0
Toxic pregnancy	6	0	2	0	0	2	0	0	1	0	1
Starvation	5	0	3	0	1	1	0	0	0	0	0
Collapsed lungs	5	4	1	0	0	0	0	0	0	0	0
Intestinal necrosis	5	1	2	1	0	0	0	0	0	0	1

*In addition, 4 deaths each were caused by liver necrosis, hemorrhagic enteritis, hepatitis, and parasitic infestations; 3 each by ruptured uterus, silicosis, gangrene, ecchinococcus cyst, endometritis, and ruptured stomach; 2 each by otitis media, cirrhosis of liver, and acute gastritis; and 1 death each by virus pneumonia, strangulated bowel, heart block, ruptured kidney, uremia, and lung hemorrhage. The remaining 8 animals died of undetermined causes.

feeding experimentation has resulted in many deaths from various forms of dietary enteritis, while the misuse of cooling and heating systems has led to various forms of lung dyscrasias.

Education and prevention are still the salient points of service to be offered the chinchilla rancher by the veterinarian.

True Hermaphroditism in a Hog

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A group of hogs which originated in the Middlewest were brought to a Philadelphia abattoir for slaughter. In this lot, 4 hogs with abnormalities of the external genitalia were observed. Each of the 4 hogs had distinct scrotal sacs, apparently enclosing testicles, as well as a normal vulva.

One had a scrotal sac which at necropsy contained, on the right side, a cystic female gonad attached to the right uterine horn. At the end of the left uterine horn was a male gonad placed intra-abdominally, while the left scrotal sac was empty. In the other 3 hogs, the scrotums were found to contain the male gonads while the vulva had an overdeveloped clitoris.

Dr. Kolodner of Philadelphia, Pa., is a general practitioner and is working for the Meat Hygiene Division of the Pennsylvania BAI in Harrisburg.

Discussion.—Since Brodey, Martin, and Lee[1] claim the classification of male and female pseudohermaphroditism is dependent solely upon the type of gonads present, the 3 hogs with male gonads and female external genitalia must be classified as male pseudohermaphrodites. Lee and Allam[2] report that true hermaphroditism is characterized by the presence of both testicular and ovarian tissue in the same animal and is usually accompanied by certain abnormalities of the external genitalia. Therefore, the hog with one male and one female gonad, a well-developed uterus, and ex-

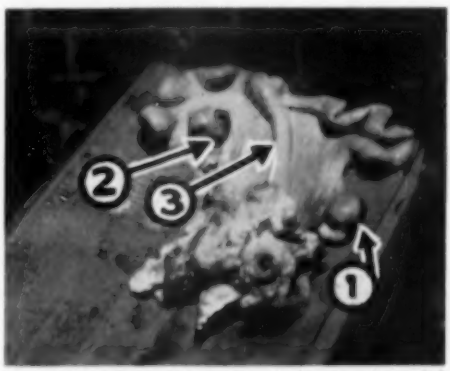

Fig. 1—True hermaphroditic genitalia of a hog: (1) testicle, (2) ovary, (3) body of uterus.

ternal female genitalia can be classified as a true hermaphrodite.

Summary.—Hogs with hermaphroditic or pseudohermaphroditic genitalia are rarely seen. One true hermaphrodite and 3 pseudohermaphrodite hogs are reported.

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Goat Owner Appeals to Veterinarians

A goat fancier approached 18 practitioners in his area, only one of whom showed an interest in goats. His problem was to find one who would do the simple operation of de-bleating a goat. He indicated that suburbanite neighbors never seemed to demand the removal of the sound-making organs of other common species of domesticated animals but that the bleat of a goat often strained neighborhood relationships. —*Dai. Goat J., Dec., 1954.*

Sheep as a Source of Q Fever for Man

In an area of Great Britain where Q fever in man is often prevalent from March to June, it corresponds with increased farming activity and excretion of rickettsias by sheep at parturition as well as with conditions favoring dissemination in dust. Of 906 sheep serum samples, complement-fixation antibodies were found with a titer of 1:10 or more in 15. However, this could not explain all of the infection in man.—*Vet. Bull., Nov., 1954.*

Man's Concern for His Animals

Under this title an editorial in the *British Veterinary Journal* (Nov., 1954) discusses the concern of British people with the fate of wild rabbits affected by the ghastly and highly fatal disease, myxomatosis. It points out that rabbits are a menace to the food supply of man and beast and that the period of suffering is only a few hours, the end being mercifully dulled by a gradually increasing coma. While praising man's sympathetic nature, it wisely adds that "Sensitive people are inclined to measure animal pain and suffering by human standards. This conception is erroneous. Recognition of this simple fact may bring some degree of comfort to those whose hearts are sorely troubled."

Winter Calves do Best in Open Sheds

In New York State, when winter calves a few days old were moved to a shed open on the south side, they outgained by quite a margin those on similar rations which remained in a warm barn.—*Successful Farming, Jan., 1955.*

Rabies in Man on Ceylon.—Health authorities report the death from rabies of 42 people on Ceylon in May, 1954. During the year, 115 persons had died of the disease and 5,000 had been treated.—*Off. Internat. des Epizoot., Nov. 24, 1954.*

Longevity of Cattle Ringworm Fungus

Two yearling bulls, free of infection, were placed in stalls that had been left empty for eighteen months because the previous occupants had ringworm. Three weeks later, both bulls developed ringworm, and a week later a lesion appeared on the forearm of the herdsman. The fungus, *Trichophyton discoides*, was isolated from the lesion of the latter.—*Brit. M. J., Dec. 11, 1954.*

Eating Habits of Goats and Cows

"When discussing the comic book allusions to tin can diets, the focus should be turned on our bovine friends," says the *Dairy Goat Journal* (Jan., 1955). So-called "hardware disease" causes tremendous losses in cattle whereas such injury is almost unknown in the goat which carefully selects its feed and drops undigestible objects from its mouth.

Salmonella Septicemia in Swine

From a group of swine which showed symptoms and lesions that could have been mistaken for hog cholera, pure cultures of *Salmonella choleraesuis* were recovered from the heart, blood, spleen, liver, and kidneys. The higher temperatures, enlarged spleens, and more extensive hemorrhages helped to differentiate this condition from cholera.—*Georgia Vet., Fall, 1954.*

Tuberculosis in the Eye of a Monkey

Lieutenant WILLIAM I. GAY, V.C., U. S. Army

Washington, D. C.

A LARGE FIBROUS growth was noticed in the lateral canthus of an eye of a 2-year-old monkey in the ape colony of the Army Medical Service Graduate School. The eye was enucleated under nembutal® anesthesia for what was thought to be an orbital tumor. On removal, it was found that the growth contained a granular substance; this tissue was, therefore, sent to the Armed Forces Institute of Pathology for section and study. The monkey recovered and the orbit healed normally.

The Armed Forces Institute of Pathology found acid-fast bacilli in this mass and advised further examination of the monkey for tuberculosis.

CLINICAL STUDY

Two months before the eye enucleation, during a routine semiannual test, the animal was tuberculin-negative (O.T. intradermally in the upper eyelid). One month after the operation, it was again tuberculin-negative. Since the animal had been losing weight, it was, at the time of the last mentioned test, anesthetized with nembutal for radiographic examination. The lesion seen in figure 1 indicated that tuberculosis might be present. The monkey died about thirty-five minutes after the anesthesia was administered.

AUTOPSY FINDINGS

The autopsy revealed multiple, small, hard nodules in the lungs—particularly the right lung. A lesion was found on the spleen along with two healed areas of scar tissue on the surface of the liver (fig. 2). There was extensive gritty granular tissue in the right orbital cavity.

The microscopic study of the tissues removed from this animal revealed changes in the trachea, liver, lung, and lymph nodes. The trachea was infiltrated by numerous

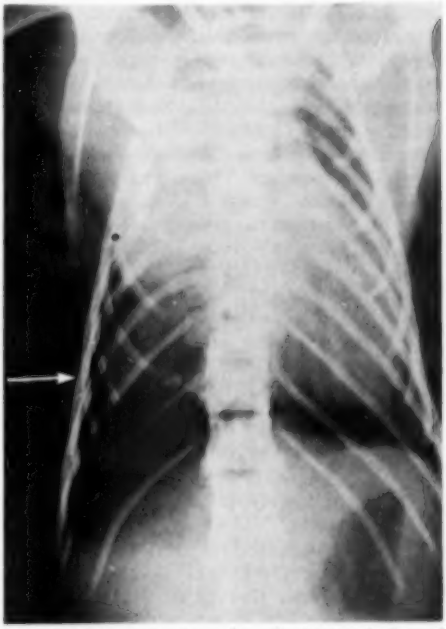

Fig. 1—Radiograph of monkey showing a shadow of multiple nodules in the ventral lobe of the right lung.

Fig. 2—A view of the carcass opened at autopsy. The arrow shows multiple, small, hard nodules in the right lung.

From the Veterinary Division, Army Medical Service Graduate School, Walter Reed Army Medical Center, Washington, D. C. Lieutenant Gay is now in the Laboratory Aides Branch, National Institutes of Health, Bethesda, Md.

Acknowledgment is made to Captain R. D. Henthorne, V.C., for assistance in autopsy and illustration of this case, and to the Armed Forces Institute of Pathology for early diagnosis.

eosinophils, lymphocytes, and plasma cells.

The lung was edematous and contained many small granulomas, with connective tissue proliferation and infiltration of lymphocytes forming a peripheral zone about a central area of necrosis. Occasional Langhan's-type giant cells were found adjacent to the bronchi and a few acid-fast organisms were present in the lesions. A single lung mite was found in a bronchi surrounding an area of granulomatous material. One of the lymph nodes was congested and contained several small focal deposits of calcium. There was also a small zone of necrosis surrounded by epitheloid cells and connective tissue proliferation in a section from this node. These lesions were typical of miliary tuberculosis.

The pathological changes of the eye removed earlier consisted of diffuse connective tissue proliferation involving the entire lateral hemisphere of the eye globe. This mass was infiltrated with lymphocytes and contained many acid-fast bacilli.

DISCUSSION

Ocular tuberculosis is occasionally seen in man but rarely is the eye an original site of infection.[1] In the eye, it may manifest itself as conjunctivitis, choroiditis, scleritis, and sometimes panophthalmitis. From this site, it readily spreads to the rest of the body, most commonly to the lungs.[2,3] The monkey is more susceptible to the bovine and human tubercle bacillus than is man.[4] This case provides further evidence that the tubercle bacillus behaves similarly in both species except that in the monkey the infection spreads more rapidly.

CONCLUSIONS

1) A complete clinical examination, including radiographs, should be made on all apes and monkeys that have visible lesions or debilitation suggesting tuberculosis.

2) Since the monkey is susceptible to the human type of tuberculosis, animal caretakers should be given annual x-ray examinations and tuberculin tests for the mutual protection of animals and man.

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Mastitis and Its Therapy in Britain

A significant reduction in mastitis occurred in Britain with the introduction of penicillin but the improvement has not been maintained. In the contagious form, eradication should be attempted by hygiene, bacteriological examinations of samples, and treatment; but for the nonspecific and acute sporadic cases, improvements in management and in milking techniques are advised. As a result of penicillin's efficiency in controlling streptococcic mastitis, gram-negative infections are more frequent than previously. For their control, newer antibiotics such as aureomycin® and chloromycetin® have been tried but so far have shown no advantage over penicillin.—*Vet. Rec., Dec. 4, 1954.*

How Stilbestrol May Produce Gains

Work at the Missouri Experiment Station, both *in vitro* and *in vivo*, indicates that the benefit from feeding diethylbestrol may be due to its affect on the rumen bacteria. In sheep, the digestibility of cellulose was improved 10 per cent and of proteins 18 per cent when this hormone was added to the ration. It seemed to be growth-promoting, rather than a fattening, hormone.—*Successful Farming, Jan., 1955.*

Carriers of Newcastle Disease Virus

The virus of Newcastle disease was found to exist in the bone marrow and the testicular and ovarian tissues of mature chickens for approximately forty days after exposure but in no other tissues for longer than thirty days. Throat swabs were infected for twenty-one, but not for twenty-eight, days after exposure. In another experiment, the common rat was found to be shedding active virus in its excreta for seventy-two hours after eating an infected carcass but the virus could not be demonstrated in any of its tissues.—*Canad. J. Comp. Med., Dec., 1954.*

A Fatal Case of Bovine Anaphylaxis

C. P. STROBLE, Ph.D., and M. W. GLENN, D.V.M.

Laramie, Wyoming

The fatality herein reported occurred during an immunization program for the production of blood-typing reagents. The program made use of 10 donors and 17 recipients, all of which were mature cows. It is believed that some of the ill-effects of repeated therapeutic transfusions may be explained on a basis of anaphylactic shock. There is usually no danger following the first transfusion but anaphylactic shock becomes a distinct possibility after any subsequent transfusion.

Anaphylaxis has been defined as a state of increased susceptibility or hypersensitivity of an animal following parenteral injection of an antigen. Sherwood[1] deals extensively with anaphylaxis but does not report its effects on cattle. Ferguson[2] mentioned the danger of anaphylaxis during immunization programs for the production of blood-typing reagents. If serum, immune to the cells of the donor, is to be produced, the blood type of the donor must differ from that of the recipient. Since these differences are antigenic, the danger of anaphylaxis, as it is defined, does exist.

In the case reported here, the donor's probable blood groups* were: $GI/E'_2 8$, C_1RW/RWX_2, V/V, Z/-, U_1/-, H/-, J/-, I/-; and the recipient's were: BO_2Y_1 $A'E'_2$/-, C_1EW/-, F/F, A/-, H'/-, 1/-. These differences allowed the possible production of reagents for the factors G, I, 8, R, X_2, V, A, U_1, and J. Fresh, whole citrated blood was transferred into the recipient, an aged Shorthorn cow, on Sept. 30, 1954. The subsequent transfusions on October 7 and 14 employed citrated whole blood, seven days and six days old, respectively. The volume of blood used for the three transfusions was 40 cc., 50 cc., and 40 cc., respectively. The blood used for the second and third transfusions had been refrigerated at 6 C. and was considered equivalent to fresh citrated blood. A second recipient, which received the same amounts of this donor's blood on the same dates, suffered no ill-effects.

On October 14, the first recipient's feces were loose and dark but no other signs of a reaction were observed. On October 15, some thirty hours after the last transfusion, she displayed signs of shock evidenced by prostration, slightly accelerated breathing, and profuse perspiration, the latter in spite of a rather low (about 40 F.) outside temperature. The body temperature was normal, the scleral tissue was hemorrhagic, and the mucous membranes were anemic. A large swelling posterior to the right scapula was later found to be a blood clot. She was given one dose of hemostatic solution, but she died during the night of October 15. A postmortem examination was conducted the next morning.

Postmortem Findings

Varying degrees of hemorrhage were found in all tissues examined. The subcutaneous tissues contained numerous petechial to suffuse hemorrhages, some of which were several inches in diameter and contrained large clots. Hemorrhages of varying sizes involved all submucous and subserous tissues, but small ones were especially numerous in the trachea. Subpleural and pulmonary hemorrhages were less numerous.

The myocardium was extensively hemorrhagic, as were the lymph nodes, liver, and spleen. The liver was a brownish yellow, the bile ducts were distended and yellowish, and the gall bladder was enlarged and hemorrhagic. The cut surfaces of the kidneys were mottled with petechial hemorrhages. The urine in the bladder was normal in color but the bladder wall contained several small hemorrhages.

The entire digestive tract was hemorrhagic, the fewest hemorrhages being in the rumen and reticulum, where they were only subserous. The hemorrhagic pattern of the abomasum and remainder of the digestive tract was severe. The contents of the abomasum and intestines were dark and mixed with a large amount of blood, which gave the fecal material a tarry appearance. All of the skeletal muscles examined were hemorrhagic but not to a marked degree.

This animal was the only 1 of the 17 recipients which showed any sign of anaphylaxis, although 15 others produced immune serum. The herdsman believed that several cows had been feverish, because of the slight sloughing of epidermis from their muzzles during the week following the final transfusion.

During a similar immunization program in February, 1953, 1 recipient died and

From the Department of Animal Production, University of Wyoming, Laramie.

*According to the blood-grouping methods of Stormont.

another became quite ill. Both of these animals were receiving blood from the same donor as was the animal herein reported. Shortly after the 1953 immunization program, 6 cows lost their tails or ears or both, probably as a result of anaphylaxis, since the weather, while freezing, was not severe. No nonrecipient animals had similar losses of appendages.

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Intramuscular Blood Transference

Transfusions are usually made to replace loss of blood or plasma in shock, to increase the circulating red blood cells in anemia, or to replace other blood components. When blood is injected intramuscularly, only relatively small amounts can be used and the plasma is slowly absorbed by the lymphatics. A hematoma, a pathological condition, is formed and at best only part of the red blood cells are absorbed into the blood stream. To be effective, blood should be injected into the vascular system.—*J.Am.M.A., Jan. 8, 1955.*

Brucellosis from Blood Transfusion

Brucellosis was diagnosed in a man thirteen weeks after a transfusion with blood from a donor, apparently then in the bacteremic stage of the disease, who never before had felt ill following giving blood. However, she developed undulant fever symptoms and her serum agglutinated *Brucella abortus* 1:1,280. This is the first known instance of this kind in Britain but such cases have been confirmed in Mexico.—*Brit. M. J., Jan. 1, 1955.*

Psittacosis Control—Correction

An item in the JOURNAL (Jan., 1955: 61) on psittacosis control with antibiotics contained a "foot *in* mouth" statement to the effect that "when some of the birds were killed and found to be negative for virus, they were removed to clean quarters to be used as breeders." As a reader indicated ". . . this is. . . a good trick. . . ." What was meant was that *the remainder* ". . . were removed to clean quarters. . ." Furthermore, the recommendation that the owner "submit 10 per cent of his treated flock for autopsy and mouse test before he starts breeding" was apparently not a requirement.

Equine Infectious Anemia in Mexico

A disease affecting race horses at Mexico City last summer was diagnosed by Dr. Morris Scherago (NYS '19) of the University of Kentucky, Lexington, as equine infectious anemia. The affected horses either developed high temperatures, icterus, hemorrhages in the oral mucosa, lack of coordination, swelling of the limbs and abdomen, and died in a few days, or they developed only a moderate rise in temperature with diarrhea, and then recovered.

Because of the expense and the time required to make a diagnosis by horse inoculations, pigs were used since they are the most susceptible nonsolipeds. Five pigs inoculated with whole or filtered blood or tissues from animals with either acute or chronic infection, developed signs of illness in about four days, with death occurring in twelve to twenty days after inoculation. The control pigs remained normal. Dr. Scherago warned that this pig test must be studied further before it can be relied upon for diagnosis.—*The Blood Horse, Nov. 27, 1954.*

Nitrogen Mustard for Canine Leukosis

A 5-year-old Alsatian dog developed lymphatic leukosis with a myeloid blood picture. A course of intravenous injections of nitrogen mustard produced temporary clinical improvement with a regression in size of the lymph nodes, but the dog was returned for euthanasia a month after the last injection. Generalized lymphatic leukosis was found.—*Vet. Bull., Nov., 1954.*

Terramycin in White Scours in Calves.—A veterinary research laboratory in Northern Ireland reports 97 per cent complete recovery within thirty-six hours when 41 young calves with white scours infection were given two doses of 0.5 Gm. of oral terramycin® hydrochloride. On six badly affected farms, two 0.5-Gm. doses given within thirty-six to forty-eight hours to each newborn calf prevented infection.—*Vet. Rec., Sept. 11, 1954.*

Pleuropneumonia in Africa.—Bovine Pleuropneumonia is now considered to be eradicated from Tanganyika. A new avianized vaccine was instrumental in eliminating it from the only remaining stronghold in that country.—*Breeders' Stockman, Nov., 1954.*

Damage Caused by Cows with Horns

The loose housing method now being widely used has increased the problems caused by cows with horns. Dr. H. E. Amstutz (OSU '45), Columbus, Ohio, reports in the *Guernsey Breeders Journal* (Dec. 1, 1954) that a marked decrease in herd mastitis often follows dehorning. Too often a cow with horns, approaching from behind other cows at a feed rack, will, in order to replace them, "hook" them in the escutcheon or flank, sometimes even puncturing the udder with her horns. Other injuries and uneasiness are also reduced when all animals in the herd are dehorned. By the proper use of local anesthesia and hemostasis, cows can be dehorned with little or no drop in their milk production. Heifers can be dehorned and have any supernumerary teats removed at the same time that they are vaccinated for brucellosis. For heifers, the horn gouge is recommended since it leaves a better shaped poll and, at their age, the opening into the sinus is negligible.

Snake Venoms Release Histamine.—The venoms of several snakes cause the liberation of histamine from the muscles of the victim. Cobra venom, the most active, causes an explosive release of histamine, with 50 to 60 per cent being released in about ten minutes. Antihistamine drugs did not reduce the toxic effect of the venom on rabbits and guinea pigs.—*Brit. J. Pharm. and Chem., Dec., 1954.*

Screw Worm Fly Eradicated on Island

Entomologists of the Agricultural Research Service, U.S.D.A., on Jan. 12, 1955, announced the eradication of the screw worm fly from the West Indies island of Curacao. Since the female flies mate only once, they were overwhelmed with 52,000 males which had been sterilized by exposure to radioactive cobalt and distributed over the Island from airplanes on March 26, 1954, followed by the release of 100 sterile males per square mile each week. On August 1, because of incomplete results, the rate was increased to 200 per week until September 1 when 400 were distributed per square mile. No screw worm flies or eggs have been found since November 4. Since the flies on this continent can survive the winter only in southern Florida, Texas, and Mexico, they probably can be likewise eradicated from Florida but not from Texas because of its proximity to Mexico.—*U.S.D.A. Release, Jan., 1955.*

The Perspiration of Camels.—Unlike most animals, camels are able to stand increases up to 11 F. in body temperature without ill effects. Perspiration occurs only at excessive temperatures and then is very limited. This is one reason for the animal's ability to live for weeks without water. One camel fed only hay and dried dates in a hot climate for seventeen days lost one third of its body weight, then, when given water, drank 20 gallons. Another drank 30 gallons in ten minutes.—*Sci. News Letter, Nov. 13, 1954.*

Cattle Ringworm in Man

Ernst, a Swiss veterinarian, in 1820 described a case of ringworm in a young girl infected from a cow. Of 39 cases recently observed in South Wales, most were caused by *Trichophyton discoides* but *Trichophyton mentagrophytes* was responsible for some. The majority had a history of direct contact with infected animals, one child having placed a calf chain around her neck. Others had apparently contracted the infection from objects against which infected cattle had rubbed. Most infections in man occur in the winter when it is most prevalent in cattle, 26 of the 39 being in November to February inclusive. Of the 39 patients, nine were less than 10 years old, 15 were 11 to 20 years old, and 15 were 21 to 60 years old. Colonies of the fungus were found growing on fecal material and it is known to survive for long periods in dark, damp stables. Acutely inflammatory lesions are self-limiting, irritating fungicides often increasing the discomfort without shortening the course of the disease.—*Brit. M. J., Nov. 20, 1954.*

A cow with mastitis should be "dried" before being marketed, otherwise her udder will fill and be more susceptible to injury during shipment, thus increasing the chance of her carcass being condemned.—*Hoard's Dairyman, Sept. 25, 1954.*

Brucellosis Incidence in Goats.—In a two-year period ending Aug. 31, 1954, 2,172 goats were tested in Arizona for brucellosis, revealing 5 reactors (0.23%).—*Dai. Goat. J., Nov., 1954.*

NUTRITION

Forage Crops for Cattle in the South

The following well-balanced grassland program is suggested for the southeastern states where the livestock industry is rapidly expanding. It includes a combination of orchard grass and Ladino clover for spring, summer, and fall; crimson clover or small grain for late fall, winter, and early spring; and lespedeza or Sudan grass for midsummer. With alfalfa hay, these provide an excellent year-round forage-feeding program. It is suggested that tall fescue grass (Kentucky 31) can be substituted for the orchard grass to be mixed with Ladino clover and that a new variety of Sudan grass (Tift) probably should be considered.—*Guernsey Breeders J., Jan. 1, 1955.*

[Interestingly, this group includes three plants which frequently cause bovine ills: Ladino clover—perhaps the most potent legume for causing bloat; Sudan grass—a frequent cause of hydrocyanic acid poisoning; and fescue—responsible for fescue foot disease (J.A.V.M.A., May, 1953: 388). —ED.]

Vitamin D in Prevention of Parturient Paresis

Despite the reduction in bovine mortality resulting from intravenous injection of calcium salts, there is still considerable hazard connected with parturient paresis (milk fever) attacks. Consequently, preventives would be welcomed to our armamentarium for coping with the problem.

The basic cause of this condition has yet to be proved. The parathyroid deficiency (hypocalcemia) theory of Dryerre and Grieg seems to come the closest of the some 30 theories that have been advanced to account for the immediate cause. According to this theory, the abnormally large decrease in blood calcium after calving is due to a temporary deficiency of the secretion of the parathyroid glands, resulting in the inability of the blood calcium regulatory mechanism to replace rapidly enough the blood calcium secreted in the colostrum.

One approach to the problem is based on stimulation of the parathyroid glands in the dry period. A ration low in calcium and high in phosphorus fed during the month prior to freshening was reported by the University of California to effectively prevent parturient paresis.[1]

Encouraging results have been obtained at the Ohio Agricultural Experiment Station using vitamin D as a preventive[7,8] following several years of research on fundamentals of the problem.[3-6] The well-known association of vitamin D with the metabolism of calcium and phosphorus led to investigation of its possible use for the prevention of parturient paresis. Briefly, the procedure that gave best results consisted of feeding the cow massive doses, 20 to 30 million units per day, of vitamin D for five to seven days before the calf was born. The form of the vitamin D used in these experiments was either type 142-F irradiated dry yeast (142,000 U.S.P. units per gram) or an oil-concentrated irradiated ergosterol (1 million U.S.P. units per gram). Vitamin D was shown to maintain blood calcium at about a 30 per cent higher level than the normal postpartum level during the critical period, thus providing a "buffer" against the sudden drain on blood calcium brought on by beginning lactation. A marked increase in blood phosphorus was observed also both before and after parturition in the cows fed vitamin D.

Forty-eight mature Jersey cows which had previous histories of parturient paresis were used in these studies. No signs of the disease were observed in 14 animals fed 20 or 30 million units of vitamin D per day for five to seven days prepartum. One of 12 cows fed 10 million units per day for the same period had an attack, but 14 of 22 untreated control cows in the same herd developed parturient paresis.

Prolonged feeding of large doses of vitamin D is not without danger. Toxicological aspects were extensively investigated at the College of Veterinary Medicine, Ohio State University, in cooperation with the Ohio

This article was provided by the AVMA Committee on Nutrition.

Agricultural Experiment Station. These studies[2,9] have shown that even at the high level of administration of 30 million units per day there is relatively little danger, provided the feeding period is limited to a maximum of seven days. Abnormal cardiac rhythms including premature ventricular systoles, paroxysmal ventricular tachycardia, auricular fibrillation, and bradycardia were detected in animals receiving large amounts of vitamin D for periods of more than seven to ten days.[9] Calcified lesions, particularly in the heart and larger blood vessels, similar to those described by Swan[10] were found in some of the animals slaughtered after being treated with large doses for varying periods in excess of a week.[2]

Vitamin D in these large doses has been approved for use in the prevention of parturient paresis by the Food and Drug Administration. It is understood that manufacturers of irradiated yeast plan to make the product available to the profession and the feed industry. Large-scale experiments under varying herd conditions are being planned by the Ohio station to determine the minimum effective dosage and various practical aspects of the procedure.

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Vitamin D Variation in Forages

The vitamin D activity of fresh green plants was found to be variable but of a low order. In the first cuttings, red clover and timothy were poorer sources of vitamin D than Ladino clover or brome grass. The first cuttings of all forages were a poorer source than subsequent cuttings at a similar stage of maturity. The vitamin D content increased with maturity. First-cutting mow-cured hay, field-cured hay, and grass silage taken from the same field at the same time had essentially the same vitamin D activity. The antirachitic activity in forage apparently increased considerably during its storage in a silo. This increase, which may be due to the destruction of an antivitamin D factor, deserves further study.—*J. Dai. Sci., Nov., 1954.*

Freeze-Drying Meat for Storage

A new process of dehydrating meat so that it can be stored at room temperature has been developed for the Armed Forces at the University of California. The meat is frozen, then warmed slightly in a refrigerated vacuum chamber which withdraws its moisture content. The pink, spongelike product is then sealed in a glass container or plastic bag which contains carbon dioxide or nitrogen gas. When used, the meat is placed in water for fifteen to thirty minutes before cooking.—*Farm J., Dec., 1954.*

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EDITORIAL

Spring Practice

To the great majority of veterinarians on this continent the term "spring practice" probably has much less significance than it had for the more elderly in our ranks in their younger years. In the temperate or variable zone, where we find ourselves, seasons are important to all living things, but to none more than to our farm animals and to those who are concerned with their problems. The fact that little more than half of our profession now is in rural practice, in contrast to perhaps 75 per cent a half century ago, suggests one reason for the reduced interest and enthusiasm toward spring practice.

However, other reasons which seem more responsible are also quite obvious. In that relatively premechanized period referred to, draft and carriage horses and mules were indispensable in the city as well as on the farm. Their average value was often four or five times that of a cow. Also, being prior to the development of immunizing agents against the continent's most deadly livestock disease, hog cholera, the swine industry was relatively undeveloped so the only animals other than the equine species which received much veterinary attention were cattle, and they were a poor second.

Rural equine practice was always decidedly seasonal. Farmers bred, raised, and "broke" most of the colts that were to supply both the rural and urban markets and, with few exceptions, colts were foaled in the spring, often early so as not to interfere with the field work assignments of their dams. At that time, the young of other farm animals were also produced almost exclusively in the spring; thus it was the season of greatest anticipation and pleasure for anyone as fond of animals as the veterinarian must be. For him, it also offered most of the greatest challenges to his professional standing. What greater satisfaction could there be than from relieving a difficult dystocia successfully? Compared to such in the impatient, powerful mare, in those pre-epidural anesthesia days, the dystocias of other species seem pretty mild. Equine dystocias, fortunately, were relatively less frequent than those in cattle, chiefly because fillies were not subjected to random pasture breeding as were little heifers, but they often taxed the veterinarian's ingenuity, skill, and physical stamina to the limit. Unfortunately, some such cases, since cesarotomies were then believed to be hopeless in horses, were abandoned and the mares destroyed for humane reasons.

Other equine problems of the spring season which invariably required attention were the "sweeneys," shoulder blisters, "sitfasts," azoturias, and miscellaneous injuries which resulted from the "breaking" of colts and the reintroduction to collars of animals after an idle season. Injuries could be exasperatingly serious when runaways or balking incidents resulted in animals getting tangled with a machine, especially if it were a disk harrow.

There was invariably much dental work also, too often including the nonsensical pulling of "eye" teeth and incising of "lampers," to humor an insistent client. Later, with the first rush of field work past, and preferably when pastures were ready for grazing but before the fly season arrived, came the rounds of colt castrating which usually totaled in the hundreds for the season. Other seasons had their peculiar equine problems but usually without the urgency of those in the spring.

With the passing decades, the farm horse gradually has practically disappeared. (Harnesses were dropped from the 1955 catalog of Montgomery Ward and Co.) Also, reproductive problems, especially those of the dairy cow, have been made less seasonal by the practice of breeding around the calendar to produce a more constant milk supply. Oddly, even though a much higher percentage of farrowing now occurs in the late winter and in the early fall, the sow dystocia calls still are confined chiefly to the spring. This is probably partly because a higher percentage of those farrowing at that time are gilts, but size is only one factor. Some suspect an unexplained

hormonal disturbance, possibly due to the forced-feeding practices of recent years.

However, the advanced breeding time has moved up other activities such as the vaccination of winter pigs so that spring remains a busy season. Frequently it is less busy now than the summer season for those with a large swine practice, or even than the fall season for those in a cattle-feeding area when shipping fever is as prevalent as in recent years. But for the old-timers who once eagerly read or listened to any discussion labeled "spring practice" the scene has changed but the nostalgia lingers on.

Furthermore, the profession has probably had no better public relations agent than the "Doc" who excelled with such problems and was readily available day or night when urgent emergencies arose.

The Order of Birth in Multipara

Those concerned have apparently taken it for granted that, at the time of parturition, pigs, pups, kittens, and the young of other multiparous species emerge from each long tubular uterine horn in the order of their proximity to the cervix. In fact, Fleming[1] states that "each fraction of the uterus corresponding to a foetus contracts in its turn. . . all successively, one cornua expelling a foetus alternately with the other." and Williams[2] states that the contractions "apparently. . . become concentrated upon . . .the fetus in the most advanced position." But is this true? Also when 2 fetuses have been found trying to enter the pelvic inlet at once, it has doubtless been assumed that one was from each uterine horn. Now comes evidence that fetal emergence may not always be that orderly.

An interesting article, "Parturition in the Pig" (*Vet. Rec.*, Nov. 13, 1954: 706), tells of a unique bit of simple research where a gilt and, later, a sow were slaughtered after the inception of normal farrowing and each genital tract was carefully studied. The gilt's farrowing was interrupted after the birth of 4 pigs in fairly rapid succession and while 12 pigs remained in her uterus. The sow was slaughtered after farrowing 1 pig; 16 others were found in her uterus. Both uteri and all fetuses were apparently normal.

The uterus of the gilt was removed and the horns were uncoiled by dissecting them free from the broad ligament. (To indicate their usual length, had the cornua been thus straightened before the uterus was severed at the pelvis, the ovarian tips could probably have been drawn approximately to the sow's nose.)

When the uterus was cautiously opened, the fetal membranes of the 4 farrowed pigs were found still attached, each having been ruptured at both poles to form a slippery tube through which other fetuses could pass. Similar perforations also had occurred in most of the other "chorionic sacs" and the fetuses had moved for variable distances from their gestative locations. Because of the length and elasticity of the umbilical cords, the pigs could move freely and, as they do at birth, could pass beyond the vagina without breaking the cord or detaching the membrane.

Three pigs were about to enter the body of the gilt's uterus, 1 in the left horn and 2, lying side by side, in the right horn. The paired position of the latter could have occurred, one might assume, because of the slaughtering and postmortem relaxation of the uterine muscles. However, when the uterus of the sow was studied, again "2 fetuses were lying side by side at one place." Also, as if to prove that this was no postmortem artifact, the pig which was in the cervix and would have been the second born had the sow been allowed to continue farrowing, was found by its cord attachment to have "come from a position distal to the foetus which was lying immediately behind it," the latter still being in the uterine horn.

Histological study of an undisturbed section of the uterus revealed that the fetal chorion was attached to the endometrium by interlocking broad-tipped villi which projected "like a blunt peg into a sort of socket in the endometrium." Much of the bulk of these villi was contributed by superficial capillaries which, when the umbilical cord ruptures and the intravascular pressure falls, presumably allows the collapse of the villi and the detachment of the individual after-birth.

The author concludes that the natural sequence of events in parturition, in so far as the fetal elements are concerned,

[1]Craig, J. F.: Fleming's Veterinary Obstetrics. 4th ed. Alexander Eger Co., Chicago (1930): 178.

[2]Williams, W. L.: Veterinary Obstetrics. W. L. Williams. New York State Veterinary College, Ithaca, N. Y. (1909): 516.

is first the rupture of the ends of the chorionic sacs, then the "free passage" of the fetuses through the "extremely slippery lining" provided by the still-attached fetal membranes and the mucus and, finally, the detachment and expulsion of these fetal membranes after their anchoring villi collapse. He states that "in perhaps 25 per cent. . . birth of a few pigs is followed by some. . . membranes before the remaining pigs. . . are born." (This estimate may be too low; at least it warns against believing that the expulsion of several membranes means that the "caboose" has arrived.)

That the parturient uterus of a normal living animal would relax sufficiently to allow 1 fetus to pass another seems odd, yet it is here reported as occurring (possibly) in both of 2 animals. If it does occur frequently, this paired-position phenomenon must have been observed during the many hundreds of cesarotomies done on sows each year, and possibly on other multiparous females.

When fetal by-passing occurs, would it be due to uterine or fetal action or both? It might be produced by a peristaltic wave, if such occur in the uterus, advancing on a relaxed cornual segment just as an intussusception apparently can be produced by peristaltic waves in the intestine.

However, those who have attempted to deliver a pig before it became fixed in the pelvic inlet, either by grasping its jaw or sloping snout between extended fingers or by attaching a delivery instrument, and have found how vigorously a pig can toss its head and can back away and, incidentally, how its teeth can lacerate the fingers, might prefer to credit fetal activity with at least some of the responsibility for any change in order.

A considerable number of pigs, perhaps 25 to 35 per cent, are presented posteriorly, and it is conceivable that even prenatally their independent nature might assert itself by causing each to push past the other should they make contact head on. Such would scarcely be likely or possible with the less aggressive and larger-headed canine or feline fetuses.

The above observations are perhaps more intriguing than significant but they may stimulate further explorations, observations, and reports by those performing either cesarotomies or necropsies on multiparous females after the inception of parturition. At least, the obstetrician, while awaiting the fruits of such labors, has a new subject, the "fetal race," upon which to ponder.—W. A. A.

AVMA Protests Life Magazine Article

The Jan. 31, 1955, issue of *Life* magazine carried a feature story entitled "Horse Doping, Still a Blot on Racing." In it, the author, John McA. Kater, Ph.D., former chief scientist for the Thoroughbred Racing Protective Bureau, cited the sales of large quantities of certain drugs to some veterinarians as *prima facie* evidence that the drugs had been purchased for other than legitimate purposes.

Other pharmaceutical products were described as "tools of the doper" and the author stated that "they require tremendous experience and skill for proper dosage; probably only the most expert veterinarians can administer them with success."

The AVMA registered its formal protest of this article with the following telegram:

Feb. 1, 1955

Mr. Henry R. Luce
Editor-in-Chief
LIFE
9 Rockefeller Plaza
New York 20, N. Y.

We vehemently protest the inferences in your January 31, 1955, article on horse doping implicating veterinarians in the illegal use of drugs. Opinions ventured by the author of this article cast a grossly unwarranted reflection upon the entire veterinary profession and, in particular, upon the many veterinarians of unquestionable integrity who are engaged in equine practice.

To imply that pharmaceutical products having untold value in the treatment and cure of diseases of animals are the "tools of the doper" is a gross misrepresentation of fact as is the accusation that the purchase of large quantities of certain drugs necessarily means they will be perverted to illegitmate uses.

It is difficult to believe that LIFE would intentionally cast this heinous reflection upon the more than 17,000 veterinarians in the United States.

We request an explanation.

AMERICAN VETERINARY MEDICAL ASSOCIATION
Dr. J. G. Hardenbergh, Executive Secretary.

CURRENT LITERATURE

ABSTRACTS

Relationships Between Strains of Vibrio Fetus

Vibrio fetus appears to have four different serological types. Several good diagnostic antigens were found among the strains of *V. fetus*. Of the organisms studied, serologically proved *V. fetus* failed to produce hydrogen sulfide.—[*K. E. Price, L. J. Poelma, and John E. Faber, Jr.: Serological and Physiological Relationships Between Strains of Vibrio Fetus. Am. J. Vet. Res., 16, (Jan., 1955): 164-169.*]

Nematodirus Spathiger, Parasite of Sheep and Other Ruminants

The life cycle of *Nematodirus spathiger* was found to be essentially similar to those of other species of the genus previously reported by others, *i.e., Nematodirus filicollis* and *Nematodirus helvetianus*. However, the minimum prepatent period of *N. spathiger* was about two weeks in lambs compared with about three weeks for *N. helvetianus* in calves; no comparable information is available for *N. filicollis*. During the prepatent period of experimental infections of *N. spathiger* in lambs, many fourth-stage larvae were in intimate contact with the jejunal mucosa; some penetrated deep into the intestinal glands and into the lamina propria but not through the muscularis mucosa. Most fifth-stage preadult and adult parasites, however, were found in the intestinal lumen. The parasitic larvae showed great development of the excretory system, particularly the renette cells, which in early fourth-stage larvae extended two-thirds the length of the body. The parasitic larvae and, to a lesser extent, adults caused direct mechanical damage to the jejunal mucosa, and heavy experimental infections in lambs caused, directly or indirectly, degenerative changes in the jejunal mucosa, consisting of erosion and necrosis of the epithelium and villi and some hyperemia, particularly during the prepatent period.—[*K. C. Kates and J. H. Turner: Observations on the Life Cycle of Nematodirus Spathiger, a Nematode Parasitic in the Intestine of Sheep and Other Ruminants. Am. J. Vet Res., 16, (Jan., 1955): 105-115.*]

Temperature of Reticulo-Ruminal Content

Temperatures of paunch contents in different areas of the reticulo-rumen were recorded following the drinking of different quantities of water at different temperatures. Changes were recorded first in the cardia, next in the reticulum, and last in the ventral sac. Return to predrinking temperatures occurred in the same order. Both the amount of water and its temperature influenced the magnitude of changes.—[*R. D. Dillon and R. E. Nichols: Changes in Temperature of Reticulo-Ruminal Content Following the Drinking of Water. Am. J. Vet. Res., 16, (Jan., 1955): 69-70.*]

Intradermic Johnin and Sensitized Ruminants

A purified protein derivative of johnin, prepared by trichloroacetic acid precipitation of Johne's bacilli culture filtrate, appeared to be more specific than regular johnin when tested on artificially sensitized goats and cattle. Both products were also tested on 1,134 cattle in herds infected with Johne's disease. Reactions classed as positive were elicited in 95 animals; 94 of these reacted to the precipitated product. Regular johnin elicited 78 positive reactions, 6 suspicious, and 11 negative. One animal reacted to regular johnin but not to the precipitated product.—[*Aubrey B. Larsen, Louis A. Baisden, and Richard S. Merkal: A Comparison of Regular Intradermic Johnin and a Purified Protein Derivative of Intradermic Johnin on Artificially and Naturally Sensitized Ruminants. Am. J. Vet. Res., 16, (Jan., 1955): 35-37.*]

Action of Gaseous Ethylene Oxide on Foot-and-Mouth Disease Virus

An atmosphere of ethylene oxide was effective in destroying the guinea pig infectivity of the foot-and-mouth disease virus. Liquid ethylene oxide, 0.5 ml., allowed to vaporize in a 1-liter container, was effective in inactivating the virus within thirty minutes and an atmosphere produced by either 0.1 ml. or 0.05 ml. of ethylene oxide inactivated the virus within sixty minutes.—[*Milton Savan: The Sterilizing Action of Gaseous Ethylene Oxide on Foot-and-Mouth Disease Virus. Am. J. Vet. Res., 16, (Jan., 1955): 158-159.*]

Aqueous Humor for Diagnosis of Newcastle Disease

A field case of Newcastle disease in chickens is described in which the primary symptoms and lesions were confined to the eyes. It was found that the aqueous humor, as well as fluid extracted from frozen lung material, produced a positive hemagglutination reaction. In a trial, using healthy laboratory chicks inoculated intramuscularly with lethal Newcastle disease virus, it was observed that the aqueous humor, as well as lung extract, produced positive hemagglutination reactions, starting four days after inoculation. The hemagglutination-inhibition test was not consistently positive until the seventh day following inoculation. Sub-

sequent tests on field cases indicated that the use of acqueous humor for hemagglutination tests is of value for presumptive diagnosis of Newcastle disease, especially during the first week of infection.—[*D. S. Clark, E. E. Jones, and F. K. Ross: The Use of Aqueous Humor for Early Diagnosis of Newcastle Disease. Am. J. Vet. Res., 16, (Jan., 1955): 138-140.*]

Chemotherapeutic Properties of Erythromycin

Erythromycin showed *in vitro* activity against gram-positive bacteria comparable to that of penicillin; it was highly effective in experimental streptococcic infection in mice, but failed to protect against *Klebsiella pneumoniae*. The antibiotic administered orally to fasted dogs, either alone or in combination with sulfamerazine, was readily absorbed and well tolerated. Intramuscular injections of erythromycin in doses as low as 5 mg. per kilogram of body weight also resulted in therapeutic serum levels. *In vitro* tests indicated a behavior of erythromycin in combination with sulfamerazine suggestive of synergism. Advantages of this mixture for treatment of small animal diseases are discussed, and references are given relative to results of clinical trial in a large number of disease entities in dogs and cats.—[*H. J. Florestano and M. E. Babler: Chemotherapeutic Properties of Erythromycin Alone and in Combination with Sulfamerazine. Am. J. Vet. Res., 16, (Jan. 1955): 160-163.*]

Prevention of Kidney Stones in Sheep

The preventive effects of hyaluronidase on the incidence of urinary calculi was tested by feeding sheep a urinary calculi-predisposing ration. While the control and hyaluronidase-treated groups of sheep did not show incidence of urinary calculi, some sheep of the untreated groups developed urinary calculi. It is suggested that this latter was caused by a crystalloid-colloid imbalance in the urine due to an excess of silicon eliminated.—[*G. O. Puntriano: Further Research on the Prevention of Kidney Stones in Sheep from the Colloidal Approach. Am. J. Vet. Res., 16, (Jan., 1955): 101-104.*]

Effects of Avian Neurotropic Viruses on Calves

The viruses of avian encephalomyelitis, eastern equine encephalomyelitis, and Newcastle disease (ND) were inoculated intrathecally or intracerebrally into 19, 2- to 3-month-old dairy calves; 6 other calves served as controls. Avian encephalomyelitis virus suspended in normal saline and injected intrathecally and intracerebrally into 2 calves caused neither symptoms nor lesions and was not recovered from the brain. Eastern equine encephalomyelitis virus, suspended in allantoic fluid and saline, injected intracerebrally into 2 calves caused depression, pyrexia, and paralysis within seventy-two hours. The virus was recovered from the brain which was affected by a diffuse encephalitis; only a few heterophils were seen in the brain lesions.

Of 5 calves injected intrathecally with ND virus, 4 were unaffected while 1 developed a severe local sterile leptomeningitis and was killed. The ND virus was not recovered from this series of calves nor were any central nervous system lesions seen when the calves were killed on the thirtieth day postinoculation. Of 8 calves injected intracerebrally with ND virus in saline, 5 developed slight pyrexia, progressive paralysis, and hyperesthesia on the fourteenth day after inoculation; 1 of the 5 died suddenly and the other 4 were killed. The remaining 3 were killed thirty days after the inoculation. All eight brains were affected with a slight diffuse encephalitis. The virus could not be recovered. Two calves injected intracerebrally with brain suspension of one of the ND-infected calves remained healthy; 6 controls injected intracerebrally or intrathecally with saline or tryptose broth or allantoic fluid remained normal. Pre- and postinoculation serums failed to reveal any significant titer change.—[*C. F. Helmboldt, R. E. Luginbuhl, A. H. Hammar, S. F. Satriano, and E. L. Jungherr: The Effects of Some Avian Neurotropic Viruses on Young Dairy Calves. Am. J. Vet. Res., 16, (Jan., 1955): 57-63.*]

Synthesis of Amino Acids

By the use of conventional manometric techniques, it was shown that each species of the genus Brucella synthesized glutamic acid and alanine from the ammonia and carbon dioxide that accumulated when urea was acted upon by the urease enzyme in whole, washed cell suspensions. This amino acid synthesis occurred only when the carbon dioxide was not absorbed from the Warburg vessel during the incubation period. Is was concluded that one of the functions of the ornithine cycle, in bacterial cells that contain urease, was the detoxification of ammonia by the synthesis of urea. The urease enzyme then effects the decomposition of urea into carbon dioxide, ammonium carbonate, and water. These end products of urea decomposition are synthesized into glutamic acid and alanine.—[*H. S. Cameron and Margaret E. Meyer: Synthesis of Amino Acids from Urea by the Genus Brucella. Am. J. Vet. Res., 16, (Jan., 1955): 149-151.*]

Polysaccharide Antigens from Leptospiral Serotypes

Immunochemical studies of similarly prepared cell-free extracts of three serotypes of Leptospira are consistent with the conclusion that the complement-fixing principle is inseparable from a macromolecular pentosan-type polysaccharide material contained in fraction 1. Although fraction 1 preparations appear to be chemically similar, they are entirely different in the complement-fixation reactions. Since it has not yet been possible by

chemical means to separate the group reactive from the serotype reactive complement-fixing determinant, fraction 1 has been regarded as an inherently genus-specific, cell-free extract of the leptospiral organism.—[*Morris D. Schneider: Polysaccharide Antigens from Three Leptospiral Serotypes. Am. J. Vet. Res., 16, (Jan., 1955): 173-179.*]

The Teeth of the Ox — Dental Fluorosis

Dental fluorosis is a widespread clinical phenomenon caused by the ingestion of excessive quantities of fluorides from natural or incidental sources. Pathological conditions which may be in evidence are mottling, defective calcification, and hypoplasia of the enamel. Patterns of accelerated attrition are important in determining the relative loss of effective use and length of service of the teeth. Knowledge of the lesions of dental fluorosis is essential in correlating a clinical diagnosis of systemic fluorosis.—[*Norman L. Garlick: The Teeth of the Ox in Clinical Diagnosis. IV. Dental Fluorosis. Am. J. Vet. Res., 16, (Jan., 1955): 38-44.*]

Vesicular Stomatitis Virus in Ferrets

The attempts and the results of efforts to recover virus from infected ferrets after nasal instillation of the vesicular stomatitis virus are described. Blood, urine, feces, and saliva samples were examined for the presence of the agent; only blood and saliva proved to contain the virus. It was isolated from the blood during the primary rise of body temperature at twenty-two to twenty-six hours after exposure and from the saliva during the second thermal response five to six days after infection.—[*T. Kowalczyk, R. P. Hanson, and C. A. Brandly: Infectivity and Pathogenicity of Vesicular Stomatitis Virus for Ferrets. Am. J. Vet. Res., 16, (Jan., 1955): 180-182.*]

Hyperkeratosis in Rats and Hamsters

A protein concentrate which had produced hyperkeratosis in cattle, when fed to rats, limited their growth and shortened their lives. It produced alopecia with mild hyperkeratosis, mild to moderate fatty degeneration of the liver, low levels of vitamin A in the liver and small thymus glands in rats. The chlorinated naphthalene produced alopecia, low levels of vitamin A in liver, limited growth, and shortened life of rats. Hamsters fed chlorinated naphthalene and vitamin A lived longer than those fed chlorinated naphthalene and carotene. The rat appeared to be more susceptible to the toxic action of a hyperkeratogenic agent than the hamster.—[*C. E. Schoettle, E. F. Reber, C. C. Morrill, and R. P. Link: Experimental Production of Hyperkeratosis in Rats and Hamsters. Am. J. Vet. Res., 16, (Jan., 1955): 183-188.*]

Fragility of Swine Erythrocytes

Measurements of erythrocyte fragility, as determined by cell resistance to hemolytic action of graded concentration of hypotonic saline solution, indicated that red cells in blood from healthy pigs less than 72 hours of age were more fragile than red cells from normal swine 7 months of age. The possibilities of using erythrocyte fragility in diagnostic procedures in baby pigs diseases are discussed.—[*A. Edward A. Hudson: Fragility of Erythrocytes in Blood from Swine of Two Age Groups. Am. J. Vet. Res., 16, (Jan., 1955): 120-122.*]

FOREIGN ABSTRACTS

Control of Rabies in Animals

In recent years, great progress has been made in control of rabies in animals. Noteworthy advances have been:

1) Greater rapidity and accuracy in diagnosis have been made possible by means of Sellers' stain for Negri bodies, the mouse-inoculation test for the isolation of the rabies virus, and the serum-virus neutralization test as a specific confirmatory procedure.

2) The development of chicken embryo-adapted, modified living virus vaccines for mass vaccination of animals, the Flury strain vaccine, in particular, has been extensively and successfully used. A second strain, the Kelev strain, shows promise but more work with this strain is required.

3) The value of mass vaccination of dogs with either inactivated or chicken embryo vaccines for the control of rabies has been proved beyond dispute. All vaccines, however, must be adequately tested for potency, and new potency tests have been developed to meet this need.

4) Postvaccinal paralysis has been shown to be caused by a demyelinating encephalomyelitis apparently produced by a specific sensitivity to a factor in nervous tissue vaccines. "Virus fixe" infection is believed to play a very minor role as a cause of this complication.

5) Rabies hyperimmune antiserum, in combination with vaccine, has been added to treatment procedures of man and animals exposed to rabies.

These advances have contributed greatly to the efficiency of rabies control procedures in many countries and have provided valuable weapons to international agencies such as FAO, OIE, and WHO which are concerned with the control of this disease.—[*Martin Kaplan: Progress in the Control of Rabies in Animals. Off. Internat. Epizoot. V., 22, (1954): 188-203.*]—J.P.S.

Some Aspects of Copper Exchanges

The combination of copper with the protein of the blood is briefly discussed. Some conclusions are drawn from what is presented in the literature. Attention is drawn to the supposition that the blood of the superior mesenteric vein, which among others contains the resorbed food substances from the small intestine, first supplies the right side of the liver via its own circulation

from the portal vein. It may be expected that copper deficiency in the liver will, therefore, first be noticed in the left lobe. The copper content in the hair would provide a good indication for the state of copper in the animal.—[*E. E. Van Koetsveld: Some Aspects of the Copper Exchanges. Tijdschr. voor Diergeneesk., 79, (July, 1954): 490-503.*]—L.V.E.

Contagious Ovine Peristomatitis

An infection with peristomatitis was found in several large flocks of sheep with lambs. Lips, hoofs, and genital lesions were seen. The infection of the hoofs in one large flock resembled foot rot. Ten sheep from this flock were treated with 70 cc. of 20 per cent sulfamethazine sodium solution. No visible improvement was observed. The lesions on the lips were treated locally with a solution of 70 per cent potassium permanganate. The hoofs were trimmed and treated with pure creoline. The foot rot and the peristomatitis infection were two different infections which may occur simultaneously.—[*P. Van de Kerk: Peristomatitis Pustulosa Contagiosa Ovina. Tijdschr. voor Diergeneesk., 79, (Aug. 15, 1954): 608-615.*]—L.V.E.

Simultaneous Immunization Against Pox Diphtheria and Pseudofowlpest

The immunizing power for fowlpox, of a vaccine which had been recommended as a double vaccine against Newcastle disease and fowlpox (intramuscular injection), could not be verified. —[*J. Jansen and J. V. D. Vlerk: The Value of a Double Vaccine to Serve as a Simultaneous Immunization Against Pox Diphtheria and Pseudo Fowl Pest. Tijdschr. voor Diergeneesk., 79, (Aug. 2, 1954.*]—L.V.E.

Methionine for Warts

According to the author, the oral use of 1 gr. of methionine twice daily for one week will cause the disappearance of warts.—[*T. P. Merklen: Use of Methionine in the Treatment of Warts. Presse méd., 62, (Jan. 2, 1954): 8.*

The Durability of Meat

In the first part of this publication, the author compares the deterioration of milk with that of meat, as well as the means available to the hygienist for checking the durability of the two substances. There are more means available for checking milk than for meat. In the second part he sets forth a new procedure for ascertaining the number of germs present on the surface of meat. A sterilized rubber stopper is pressed on the surface which is being examined and subsequently this stopper is rinsed in a physiological solution. The number of germs transmitted per square centimeter of surface of the stopper is calculated by means of Koch's plate culture procedure. This method appears to be as satisfactory as the usual one in which samples are punched out of the meat and agitated in the fluid and it has the advantage of leaving the meat undamaged. Some provisional data are mentioned and discussed briefly.—[*J. Hoekstra: The Durability of Meat. Tijdschr. voor Diergeneesk., 79, (July 1, 1954): 484-493.*]—L.V.E.

Subcutaneous Carbon Tetrachloride in Fascioliasis

Carbon tetrachloride was administered subcutaneously in doses of 2 to 3 cc. to 1,018 sheep with fascioliasis. After injection, some of the sheep showed a period of excitement for twenty to sixty minutes, followed by depression, but there were no serious complications and no fatalities. There were no injection abscesses. The percentage of animals infested, as determined by fecal egg counts before treatment was 47.3 per cent. The percentage infested twelve to fourteen days after treatment was 5.0 to 7.0 per cent. The subcutaneous treatment was recommended because it was just as effective as oral administration and produced no fatalities. The author dismissed hexachloroethane as not effective enough.—[*N. V. Demidov, Skriabin All-Union Inst. of Helminthology: A New Method of Using Carbon Tetrachloride in Fascioliasis of Sheep. Veterinariya, 31, (April, 1954): 16-18.*]—R.E.H.

Investigation of Blood Serum of Dogs Aided by Paperelectrophoresis

The authors describe briefly the paperelectrophoresis of serum proteins. The relative percentage of these proteins in serums of dogs in normal and pathological cases has been estimated with the help of this method. Moreover the total protein content has been calculated from the specific density of the serum. The significance of the differences between the figures, obtained from serum of normal and sick dogs, has been computed. The following significant results have been obtained in hepatitis—decrease of albumin and total protein, increase of *alpha* 2 and *beta* 1 globulin; in cirrhosis of the liver—decrease of albumin and total protein, increase of *beta* 1, *beta* 2, and *gamma* globulin; in benign tumors—decrease of albumin, increase of *gamma* globulin and total protein; in tumors—decrease of albumin, increase of *alpha* 2, *beta* 1, and *gamma* globulin; in various inflammations—the protein variations resemble those of hepatitis with increase of total protein. The authors point out the possibility of the use of paperelectrophoresis as a differential diagnostic aid.—[*T. de Wael and G. H. B. Teunissen: The Investigation of Blood Serum of Normal and Diseased Dogs with the Aid of Paperelectrophoresis. Tijdschr. voor Diergeneesk., 79, (1954): 447-454.*]—L.V.E.

BOOKS AND REPORTS

The Practice of Veterinary Medicine

In this sixth edition of his good text on large animal diseases, the author mentions, as a revising problem, knowing ". . .where to omit the old and begin the new. . . ." Keeping a text up-to-date in this rapidly changing time is difficult. However, he has succeeded better in adding the new than in reducing and correcting the old. About 15 subjects have been added and many somewhat revised, whereas only 3 were deleted; an addition of 61 pages and 8 illustrations.

The chief criticism of this practical text might be called its localism. It is an excellent treatise on subjects with which the author is familiar but is vague and often misleading in others, especially the diseases of swine.

For instance, a good new chapter on "atrophic infectious rhinitis" in swine is followed by one on "infectious rhinitis" (bull nose) which was written before these two quite distinct maladies were differentiated. Furthermore, the latter is readily curable (sulfonamides) the former is not.

One new disease, transmissible gastroenteritis of swine, has been added twice, first on page 174 as a disease of "baby pigs," then on page 463, as a disease of "pigs."

However, perhaps the most misleading errors are in the discussion of swine erysipelas. It is, as stated, a seasonal disease but not "from July to September"; the greatest numerical losses usually occurring in June and the greatest poundage losses in October. Few differential diagnoses in veterinary medicine are as economically important as that between hog cholera and acute swine erysipelas, yet many of the symptoms given for the latter could occur in either but are quite typical of cholera, not of acute erysipelas. Among these are: "do not eat," "weakness of the hind quarters," "vomiting," "first. . . constipation. . . followed by diarrhea." Any disease can be complicated, but in observing many hundreds of herds with acute swine erysipelas the reviewer can recall seeing no vomiting and a marked diarrhea in only two herds. Likewise, of seven lesions mentioned, only two could be considered as typical. On the other hand, many of the most important and significant symptoms and lesions of erysipelas are not mentioned.

Another disappointment is the failure to adequately distinguish between bovine actinomycosis and actinobacillosis. Most of the confused statements, current twenty years ago, are retained. The remarkable response of the "wooden tongue" form of actinobacillosis to sodium iodide therapy would seem to merit more special mention.

In other instances, newer references and information have not been added; for instance, the benefits of cesarotomy in "pregnancy disease of sheep" is not mentioned, nor is the reduction of certain torsions and impactions in horses by laparotomy.

Nevertheless, this is the best American text in its field and should be in every veterinarian's library.—*[The Practice of Veterinary Medicine. By D. H. Udall. 796 pages. D. H. Udall, New York State Veterinary College, Ithaca, N. Y. 1954. Price not given.]*—W. A. AITKEN.

Anatomy of Domestic Animals

The publication of a new textbook on the anatomy of domestic animals is a most welcome addition to the sources of information available to the student, teacher, and practitioner. In the past few years, the fields of human and comparative anatomy have been aided by the publication of many new texts and it is most fitting that the field of veterinary anatomy be enhanced by a fresh approach to the understanding of the comparative morphology of domestic animals. This textbook, when completed, will consist of three volumes. The first, just published, consists of the skeletal system, ligaments, muscles, and locomotion. The second volume (1955) will be devoted to the viscera, and the third (1956) will include the circulatory and nervous systems, endocrine and sense organs, integument, and the anatomy of domestic birds.

The authors began this task in 1950 with the objective in mind of a single comparative text covering all the organ systems in a book the size of the present volume. They soon realized that a more inclusive presentation was warranted and necessitated a division into a three-volume text.

It is the authors' conviction that the domestic animals should be equally considered in the teaching of veterinary anatomy. For this reason, they have avoided the selection and description of a "type" animal to which all others may be briefly compared. Thus, the comparative morphological features of each species are discussed.

The value of a textbook of anatomy is determined to a great extent by the choice and quality of the illustrations. Even if one has little knowledge of the German language, the figures with their explanations are sufficiently clear to be of use. It is gratifying to note that of the 517 figures which appear in the text, only 94 have been borrowed from others. This represents a significant contribution of 423 new illustrations to a field always in need of visual explanation.

The teeth are not considered in the present volume although it seems most logical to study the teeth while studying the skull. The description of each muscle and its variation between the species is followed by its action, while tables of nerve innervation appear with the appropriate muscle groups.

A serious shortcoming of the present volume is the absence of references. The pertinent literature is most important to all serious students of anatomy and it is most regrettable that the authors chose to eliminate the bibliography in order to conserve space and reduce the size of the volume.

In the final analysis, we should be grateful to

the authors for their labors in assembling the comparative facts as they are known and presenting them in a clear, functional perspective. This volume is certainly worth owning and if an English edition were available, I think it would find wide acceptance as a text in this country.—[*Lehrbuch der Anatomie der Haustiere Band I: Bewegungsapparat (Textbook of the Anatomy of Domestic Animals. Vol. I: Skeletal and Muscular Systems. B. Richard Nickel, August Schummer, and Eugen Seiferle. 502 pages. 517 figures. Paul Parey, Berlin. 1954. Price 78 German marks (approx. $19.*]—HOWARD E. EVANS.

Pamphlets on Care of Small Animals

The American Humane Association has completed the publication of several leaflets on the care of dogs, cats, fish, birds, and other small animals (rabbits, mice, etc.). Veterinarians are constantly called upon to answer questions regarding care. Pamphlets of this kind may be useful to give to clients in response to their inquiries. The American Humane Association will send a sample set without charge to any veterinarian who requests them.—[*The American Humane Association, 896 Pennsylvania Street, Denver 3, Colo.*]—W.H.R.

A Handbook of Laboratory Animals

A new type of book is always a difficult procedure, and "A Handbook of Laboratory Animals," prepared by the Institute of Animal Resources, is a new type of book. If one expects to find much information on the breeding, care, or feeding of laboratory animals, as should be expected from the title, one will be disappointed. Rather, the subject matter of the booklet indicates that the title should have been "Laboratory Animal Resources and Laboratory Animal Users." Even in this area the booklet is deficient, since a quick review of the users of laboratory animals will show only about ten of 89 medical schools listed, and three of 17 veterinary schools, and of those institutions listed, there are obvious gaps in the information supplied.

On the supply of animals, the listings are more complete, and the genetic constitution of the animals, of the mice in particular, makes the booklet valuable for that purpose.

There are selected references on animal care (p. 60) that have been recommended by our own AVMA Committee on the Veterinary Care of Laboratory Animals, but this is then confused by the addition of 46 references, many of which are of questionable value and were purposely deleted from the AVMA Committee listing.

The table on the "uses of laboratory animals" may also be misleading. Certainly the uses of laboratory animals would fill thousands of pages in itself. It is not readily apparent from the text, but an attempt has been made to help a potential investigator select the type of animal he should consider for the problem in hand. To attempt such a table is heroic indeed. This is the first edition of a booklet that fills a need, future editions of which should increase in value.—[*A Handbook of Laboratory Animals. Prepared by the Institute of Animal Resources. Publication 317 of the National Academy of Sciences, National Research Council, Washington, D. C., 1954. Price $1.50.*]—N. R. BREWER.

Protozoology

As a source of information on protozoa, the fourth edition of Dr. Kudo's book is unsurpassed. It is still divided into the two major sections on general biology and taxonomy and special biology, but the material on general biology has been extended appreciably as compared with previous editions. This is especially true in the chapters on morphology, physiology, reproduction, and variation and heredity. These sections now contain a wealth of recent and interesting material. The information on genetics and cytology makes a difficult subject very readable. The section on taxonomy and special biology has been changed little except for an increase in number of illustrations. This feature is constant throughout the book where many excellent photographs have been substituted for line drawings. Features which make this edition even more valuable are a separate author and subject index and greatly extended bibliographies at the end of each chapter.

The utility of this book to the practicing veterinarian is limited, since much of the book is devoted to free-living protozoa with a rather limited discussion of the parasitic forms. For the veterinary parasitologist and graduate student, however, it is a book which will be taken from the shelf often for reference.—[*Protozoology. By Richard R. Kudo. 901 pages. 376 illustrations. Charles C. Thomas, Springfield, Ill. 1954. Price not given.*]—RALPH E. THORSON.

The Book of Wild Pets

The author, a zoologist, writes from personal experience about the care and feeding of the more common native reptiles and birds in captivity. Although it is written for the layman, this book is a good reference for the practitioner who occasionally is called upon to furnish detailed information on wildlife pets. Each of the 23 chapters is well documented. The book is well bound and contains many fine illustrations.

Since this edition is a second printing of the 1937 edition, some discussions, especially the health of captive mammals and birds, should not be criticized in the light of present knowledge. Inasmuch as the emphasis is placed on native wildlife and not on exotic species, parrots, parakeets, and other psittacine species are not included.

The chapter on fish diseases, although not in the province of the veterinarian, was interesting to the reviewer, *viz.*, constipation is treated by placing fish in a hospital tank containing a teaspoonful of

magnesium sulfate per gallon of water for a day or two.—[*The Book of Wild Pets. By Clifford B. Moore. 545 pages. 300 illustrations. Charles T. Branford Co., 551 Boylston St., Boston 16, Mass. Price $5.95.*]—JOHN R. GORHAM.

The Biochemistry of Semen

This book is a condensed review of accumulated knowledge in the rapidly expanding field of physiology of semen. The subject matter includes the developments in mammalian and nonmammalian physiology. The components of semen with their origin are discussed and the physiological significance of the seminal plasma is noted. There is factual information on the chemical and physical properties of whole ejaculated semen. The constituents of spermatozoa are dealt with in a separate chapter.

The intermediary metabolism of spermatozoa and the knowledge of its practical application in the storing of semen is pointed out. The author is conservative in evaluating new findings. With its 26 pages of references to the subject matter, there is much factual information to be found in this comprehensive review. This book should find a place on the shelf of every veterinarian interested in artificial insemination, as well as workers in this particular field. Unfortunately, there are no titles in the reference material—a current tendency in the false economy of conserving space.—[*The Biochemistry of Semen. By T. Mann. 1st ed. 254 pages. 7 plates. 16 figures. John Wiley and Sons, Inc., New York (Methuen and Co., Ltd., London), 1954. Price $290.*]—G. K. L. UNDERBJERG.

Acetonemia in Dairy Cows in Greece

The author has had the opportunity to study a large number of cases of acetonemia in dairy cows in Greece both in cows imported from Denmark, Sweden, and Holland and in cows raised in his own country that have recovered from the disease. In this report, he gives the results of his observations and experiments.

The study is divided into three parts, the first of which is devoted to the physiology of the digestive tract and the metabolism of foods (lipids, carbohydrates, proteins, microelements).

The second part concerns the etiology and pathogenesis of acetonemia, as well as various theories formulated to explain its cause. Concerning the etiology, the author, without overlooking the considerable effect of various factors such as the problem of acclimation, poor hygiene, continuous stabling, etc., postulates that the ratio between fats and carbohydrates in the ration plays an important part in the origin of the disease. This hypothesis is based on the frequently repeated observation that when the ratio of lipids to carbohydrates is narrow (1:4 to 1:5), the disease is frequent; while, everything else being equal, when that same ratio is broad (1:10 to 1:12), acetonemia is rare.

The above theory is substantiated by the fact that the disease becomes rare when the food ration with a narrow lipoglucide ratio and frequent acetonemia is corrected. As regards the pathogenic mechanism, the author believes also that the acetonemia of dairy cows may be considered an adaptation disease falling under the general syndrome of adaptation (H. Selye).

Finally, the third part of the study relates to the importance of the acetonemia of dairy cows from the point of view of the inspection of meats. On this subject, the author indicates the need for qualitative study of ketone bodies in questionable meat.—[*Acetonemia in Dairy Cows in Greece. By C. B. Tarlatzis. A monograph published by the Veterinary Microbiological Institue of the Ministry of Agriculture and the Zootechnical Laboratory of the Geopanic High School, Athens.*]—CARL BUNN.

Profitable Turkey Management

Generally, this pamphlet covers the entire field of turkey husbandry. The opening chapters deal with the selection, care, and management of the breeding stock. Succeeding chapters discuss the starting, care, and management of the young poult. A discussion of various types of brooder houses, brooder equipment, range equipment, and "pole barn" equipment is given.

Special chapters have been devoted to artificial insemination, incubation troubles, and marketing turkeys. The final chapters are limited to a discussion of the control, treatment, and prevention of various diseases and parasites of turkeys.

The text is well supplemented by good illustrations. Veterinary students and veterinary practitioners who are interested in turkey husbandry and turkey diseases will find this a valuable reference book.—[*Profitable Turkey Management. By S. W. Hamilton. A Pamphlet. 9th ed. 160 pages. The Beacon Milling Co., Inc., Cayuga, N. Y.*]—C. L. NELSON.

Comparative Anatomy of Domestic Animals

The first volume of this textbook describes the bones and the muscles of horses, cattle, swine, and dogs. With regard to the size (173 pages) the description is, of course, relatively superficial and can not be compared with other classical books of anatomy of the domestic animals.

Also, the pictures, which have always been important in any book of anatomy, are in this publication just simple drawings, some of which do not reach the high level of pictures in other known textbooks of anatomy.

Particularly, the important chapter pertaining to kinetics (static and dynamic) has been discussed in a limited way so that it is hardly believed to be sufficient.—[*Textbook of Comparative Anatomy of the Domestic Animals (Lehrbuch der vergleichenden Anatomie der Haustiere). By J. Dobberstein and T. Koch. Vol. I. 173 pages. 186 illustrations. S. Hirzel Verlag, Leipzig, Germany, 1953. Price not given.*]—F. KRAL.

THE NEWS

Ninety-Second Annual AVMA Convention–Minneapolis August 15-18, 1955

Plan Your Vacation in Minnesota—"Land of 10,000 Lakes"

Make Your Convention Hotel Reservations Now

Those attending the 1955 AVMA Convention in Minneapolis will have unlimited opportunities to combine with it a vacation interlude in the "Land of Sky Blue Waters" where the lakes, streams, and forests offer many choices of scenery and sports—boating, camping, fishing, swimming, and resort accommodations of all kinds.

The following message from Dr. R. Fenstermacher, chairman of the Committee on Reception and Hospitality of the Committee on Local Arrangements for the convention, emphasizes that convention-goers who want to vacation in Minnesota either before or after the meeting should make their resort reservations as soon as possible because of the heavy summer tourist season. Dr. Fenstermacher writes:

A cordial invitation is extended by the Minnesota State Veterinary Medical Society and the Committee on Local Arrangements to all members of the AVMA, the Women's Auxiliary, their families, and others who plan to attend the

Air view of three of the 22 lakes within the city limits of Minneapolis. Lake of the Isles is in the foreground, Lake Calhoun is in the center, and Lake Harriet is in the background. These lakes are in the heart of the residential district.

1955 convention in Minneapolis, to enjoy a vacation in Minnesota, state of 10,000 lakes.

During August, the tourist season is in full swing here. Thousands of visitors are in our resort areas. If you plan to take a vacation in this wonderful state of healthful recreation, either before or after the convention, may we suggest that you request reservations at the resort of your choice as soon as you possibly can.

The majority of the resort areas are in the central, north-central, and northeastern parts of Minnesota. Those interested in pan-fish fishing should contact resorts in the central and southern part of the north-central areas; wall-eyes and northern pike are in many of the lakes of the resort areas; brook trout and lake trout are in the streams and lakes in the northeastern or "Gunflint Trail" area.

Minnesota Tourist Information, Department S, State Capitol, St. Paul 1, Minn., has pamphlets that list the vacation resort areas. If you are interested in certain sections of Minnesota, write for further information to the secretary of any one or more of the area resort associations below, or write to Dr. R. Fenstermacher, University Farm, St. Paul 1, Minn., who will send a copy of the resort leaflet to any interested person.

LAKE VERMILION AREA—Lake Vermilion Resort Association, Virginia, Minn.
ELY AREA—Chamber of Commerce Resort Group, Ely, Minn.
PARK RAPIDS AREA—Associated Resorts, Park Rapids Regions, Park Rapids, Minn.
BEMIDJI AREA—Bemidji Resort Owners' Association, Bemidji, Minn.
GUNFLINT TRAIL AREA—Gunflint Trail Association, Grand Marais, Minn.
ALEXANDRIA AREA—Alexandria Resort Association, Alexandria, Minn.
HIAWATHA VALLEY AREA—Hiawatha Valley Association, Winona, Minn.
LAKE SUPERIOR—NORTH SHORE AREA—Lake Superior-North Shore Association, Grand Marais, Minn.
BRAINERD AREA—Paul Bunyon Vacationland, Inc., Brainerd, Minn.
FERGUS FALLS-BATTLE LAKE AREA—Heart of the Lakes of Otter Tail County Association, Otter Tail, Minn.
LONGVILLE-PINE RIVER AREA—Long Pine Playground Association, Longville, Minn.
MILLE LACS LAKE AREA—Mille Lacs Lake Association, Onamia, Minn.
DEER RIVER AREA—Deer River Resort Association, Deer River, Minn.
GRAND RAPIDS AREA—Grand Rapids Chamber of Commerce, Grand Rapids, Minn.
PAYNESVILLE AREA—Lake Koronis Tourist Association, Paynesville, Minn.
LEECH LAKE AREA—South East Shore Association of Leech Lake, Walker, Minn.
KABETOGAMA LAKE AREA—Kabetogama Lake Association, Ray, Minn.
MINNETONKA LAKE AREA—Minnetonka Resort Owners' Association, Excelsior, Minn.
DETROIT LAKES AREA—Detroit Lakes Civic and Commerce Association, Detroit Lakes, Minn.
CHISAGO-CENTER CITY AREA—Chisago Chain of Lakes Resort Association, Chisago City, Minn.

If you are interested in vacationing in adjoining states or in the Province of Ontario, Canada, write to Dr. R. Fenstermacher, University Farm, St. Paul 1, Minn., and a pamphlet will be forwarded which contains the address to which requests may be directed for information about other recreational areas.

HOTEL RESERVATIONS

All of those planning to attend the Minneapolis session are urged to make their reservations early. Hotel information and a reservation form appear in this issue (pp. 46, 47) and will be printed in succeeding issues for several more months.

AVMA Invites Nominations for 1955 Humane Act Award

Veterinarians and students in veterinary medicine throughout North America are being asked to submit nominations for the AVMA Humane Act Award, given annually to a boy or girl not over 18 years old who has performed an outstanding act of kindness to animals.

Deeds on behalf of small domestic animals have predominated in the winning column since start of the award in 1944, but the committee in charge of the project emphasizes that kindness to livestock and wild animals is just as acceptable in determining the winner.

Nominations should be sent not later than May 1, 1955, to the American Veterinary Medical Association, 600 S. Michigan Ave., Chicago 5, Ill.

The winner will be announced at the AVMA national convention at Minneapolis, Minn., in August. The award consists of a framed certificate describing the act of kindness and a $100 U.S. Savings Bond.

Last year's winner was a boy who advocated the use of maternity pens for cows as a means of combating calf diseases and preventing calf injuries at birth. Among other winners in the past was a boy who rescued a dog trapped in a 300-ft. canyon, a boy who built a bumper device to protect a blind dog that had been his childhood pet, a girl who captured a rabid dog, and a boy who rescued some valuable show horses from a burning barn.

Council on Education Approves Veterinary College in Turkey

The Council on Education of the American Veterinary Medical Association, at its regular semiannual meeting in Chicago on Nov. 20, 1954, placed the College of Veterinary Medicine, National University of Ankara, Turkey, on the list of recognized foreign veterinary colleges for graduates in 1953 and in years subsequent to that date. In so doing, the Council recommends to state boards of veterinary examiners and agencies which employ veterinary personnel that graduates of the Ankara school in the years referred to be accorded the same recognition as graduates of Council-inspected and approved veterinary colleges in the United States and Canada.

Recent Work of Dr. Borgman, Research Fellow

Dr. Robert F. Borgman (MSC '47) who, with the aid of an AVMA Research Fellowship, earned his M.S. degree (MSC '49), is the author of the article, "Pasteurellosis and Enzootic Pneumonia in Goats," in this issue of the JOURNAL (pp. 198-204).

Dr. Robert F. Borgman

His AVMA Research Fellowship thesis was "The Response of Adult Dogs and English Bulldog Puppies to Thyroid Stimulation" (*see J.A.V.M.A., 115,* (1949) : 480-486, and *Am. J. Vet. Res., 11,* (1950) : 149-156).

After completing his fellowship, Dr. Borgman practiced at Asheville, N. Car., for nearly four years. His manuscript, "Dosage Studies of Surital Sodium in Dogs" (*J.A.V.M.A., 122,* 1953: 161-163), as well as a few clinical reports, is the result of research done during that time.

In March, 1953, Dr. Borgman was called to active duty in the Army Veterinary Corps and after completing the three-month course at the Army's Meat and Dairy Hygiene School in Chicago, he was assigned to the physiology division of the Chemical Corps Medical Laboratory, Army Chemical Center, Md., where he has resided with his wife and two young daughters. In this service, which will terminate this month, he held the rating of captain and has been in charge of the veterinary activities of the animal colonies. He also has been a member of the Animal Care and Field Therapy Committees at the Laboratory.

It was during his Army assignment that Dr. Borgman made the study of pasteurellosis in goats. He also studied the relationship of the acetylcholine esterase activity of erythrocytes and brain tissue of rats to various nutritional factors and to endocrine secretions. The nutritional and endocrine agents were used in the treatment of rats poisoned with an anticholinesterase compound, such as might occur when insecticides of this nature are used on livestock. This information should also be of value in understanding nervousness during endocrine disorders.

American College of Veterinary Pathologists

The American College of Veterinary Pathologists held its annual business meeting and seminar at Abbott Hall, Northwestern University Medical School, Chicago, on Nov. 27, 1954. At the business session, the following officers were elected for 1955: Drs. R. A. Runnells, East Lansing, Mich., president; W. H. Riser, Skokie, Ill., vice-president; and Lt. Col. T. C. Jones, Washington, D. C., secretary-treasurer. Dr. J. H. Sautter, St. Paul, Minn., was elected to the Council of the College for a term of four years, the other members being Drs. C. R. Cole, Columbus, Ohio; C. C. Morrill, Urbana, Ill.; D. R. Cordy, Davis, Calif., and the officers named above.

The subject of the seminar, which was conducted by 40 members of the College as part of its advanced teaching program, was "Granulomatous Diseases."

On the previous day, the College conducted an examination for certification of veterinary pathologists. Candidates are required to have at least five years of professional experience following receipt of their veterinary degrees, two of which must be supervised training in veterinary pathology, and one must be in practice, teaching, or research in veterinary pathology. Candidates are admitted to the certification examination only after approval by the Council.

This year, the following veterinarians took the examination, were awarded certificates as veterinary pathologists, and elected to membership in the College: Drs. W. H. Eyestone, National Cancer Institute, Bethesda, Md.; H. R. Cohen, Department of Veterinary Science, University of Wisconsin, Madison, Wis.; D. F. Johnson, Jr., A. & M. College of Texas, Department of Veterinary Pathology, College Station, Texas; R. J. Johnston, Research Division, the Upjohn Company, Kalamazoo, Mich.; Peter C. Kennedy, School of Veterinary Medicine, University of California, Davis, Calif.

The American College of Veterinary Pathologists was organized in 1949 and was the first specialty examining board which applied for and was granted recognition by the AVMA; this took place in 1951 at the annual meeting of the Association in Milwaukee. It was established in recognition of the need for joint effort to solve the specialized problems in teaching, research, and practice of veterinary pathology. The College encourages veterinarians to enter veterinary pathology, to acquire training of acceptable standards and so equip themselves

(Continued on page 246)

News From Washington

It is expected the Department of Army shortly will announce that the **veterinary and pharmacy ROTC program** will be discontinued completely by June, 1956. Those who are now juniors will be permitted to complete the advanced course. All others in the veterinary ROTC (freshmen and sophomores) will be discharged. It is understood, however, that those in the latter group will be permitted to apply for transfer to other branches available on the campus. One reason given for discontinuing the above programs is that neither is necessary for the procurement of veterinary or pharmacy officers; another is that the Department of Army plans to eliminate branch training at all colleges, operating only a general military science ROTC (nonbranch training course). All medical and dental ROTC programs were discontinued about two years ago.

★ ★ ★

A number of bills introduced in the 84th Congress pertaining to the draft laws, social security, and tax deferment plans, believed of interest to members of the veterinary profession, are:

H.R. 3005 — extension of the **regular draft** (Universal Military Training and Service Act) for four years. Hearings were held by the House Armed Services Committee which recommended by unanimous vote the enactment of the proposed legislation. The House voted on this February 8, the bill passing 394 to 4.

H.R. 2886 — extension of the **doctor draft law** for another two years. No date was set for hearings.

H.R. 751 — extension of **social security coverage** to include lawyers, veterinarians, funeral directors, and others. It does not include physicians and dentists.

H.R. 2172, H.R. 2874 (and several others) — to **amend the Social Security Act** to reduce, for purpose of Old-Age and Survivors Insurance benefits, the age requirement from 65 to 60.

H.R. 852 — would **repeal** present **social security law** and substitute plan whereby individuals or business firms would pay 3 per cent of gross income (personal income exempt up to $250 a month) into a fund matched annually with tax funds. Annuities would be paid to all persons over 60 years of age; to those between 18 and 60 years of age when disabled for more than six months; and to unemployed widows with children under 18 years old.

A number of congressmen have introduced bills which would amend the Internal Revenue Act to provide for **tax postponement for the self-employed.** One bill (H.R. 28) would allow a limited income tax deduction for premiums paid on annuity and life insurance contracts.

H.R. 9, H.R. 10 — would allow **self-employed persons to deduct 10 per cent** of their earned net income or $7,500 (which ever is less), but not to exceed $150,000 in a lifetime. The funds would be paid into a restricted retirement fund or an annuity contract.

H.R. 267 — would permit **postponement of income tax up to 15 per cent** of earned net income or $10,000, whichever is less, providing the money is paid into a restricted retirement fund.

★ ★ ★

All of the **Charolais cattle** belonging to Mr. A. A. Broussard, including the smuggled animals with their natural increase, have been returned to Mexico. Three Charolais bulls belonging to Mr. J. A. Lawton have not been returned. The Bureau of Customs has granted him further extension of time.

AVMA Office Address in Washington
Brig. General James A. McCallam (Ret.)
Room 109, 1507 M Street, N.W.
Washington 5, D. C.

(Continued from page 244)

to render maximum service to the public and their profession. The present membership numbers 63.

Those who desire further information about the American College of Veterinary Pathologists may write to Lt. Col. T. C. Jones, secretary-treasurer, Armed Forces Institute of Pathology, 6825 16th St., N. W., Washington 25, D. C.

Ralston Purina Fellowship Awards Program for 1955-1956

The Ralston Purina Company has announced that ten fellowship awards will be granted for the 1955-1956 school year for graduate study in agricultural research. The awards will be made in the fields of nutrition and physiology research as applied to dairy, poultry, and animal husbandry, and research in transmissible diseases of livestock and poultry.

Selection of the recipients will be made by a committee of five representing the Poultry Science Association, American Society of Animal Production, American Veterinary Medical Association, Land-Grant College Association, and American Dairy Science Association. Dr. L. C. Ferguson of Ohio State University is the AVMA representative.

Not more than three fellowships will be awarded in each of the fields of dairy husbandry, animal husbandry, and poultry husbandry, and one in the field of veterinary science. The amount of the fellowship is $1,560 annually and a recipient may be eligible for a tenure of three years.

Persons who are interested in applying should write to the Ralston Purina Research Awards Committee, c/o Mr. J. D. Sykes, Ralston Purina Co., St. Louis 2, Mo.

Smithsonian Institution Wants Specially Trained Veterinarian for National Zoological Park

The Smithsonian Institution is seeking a veterinarian with special aptitudes, training, and experience for work with wild animals at the National Zoological Park in Washington, D. C. The qualifications of the person to be selected are quite specific with respect to education, specialized training, interest in wild animals, and other attributes. The job description is too detailed for reproduction here but full information can be obtained by any interested person by writing to Dr. W. M. Mann, director, National Zoological Park, Washington, D. C.

The position description carries a "veterinarian GS-12" designation, the salary range of which is $7,040 to $8,040.

STUDENT CHAPTER ACTIVITIES

For copy deadline, see "Among the States and Provinces"

Kansas Chapter.—During the first part of the school year, activities of the Kansas State College Student Chapter of the AVMA included six meetings, a fall dance and senior class banquet, a picnic, and the construction of a float (which won third place), for the homecoming parade, as well as a full intramural athletic program.

Four of the program speakers were graduates of the School who are now in practice: **Drs. F. W. Jordan,** Abilene; **Bob Steele,** CK Ranch, Brookville; **Jay Reynolds,** Great Bend; and **Lee Railsback,** Ellsworth, Minn. Other speakers were **Drs. E. J. Frick,** of the staff, and **Mr. F. W. Atkeson,** Department of Dairy Husbandry, Kansas State College.

At the second October meeting, **Dean E. E. Leasure** named Norman Meriweather as the winner of the 1954 Borden Award.

s/MARTIN FREY, *Publicity Chairman.*

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Missouri Chapter.—The regular monthly meeting of the University of Missouri Student Chapter of the AVMA was held Jan. 10, 1955.

The guest speaker, **Dr. Harry Philpott,** dean of religious life at Stephens College, Columbia, spoke on ethics of the veterinary profession.

The following officers were elected: Robert Hertzog, president-elect; Sidney Ingram, vice-president; James Crockett, secretary; and Robert Fuchs, treasurer.

s/JERRY JOHNSON, *Retiring Secretary.*

• • •

Pennsylvania Chapter.—To familiarize the students with the various research program in progress at the University, a report on some project was presented at each of the meetings of the University of Pennsylvania Student Chapter of the AVMA during the fall semester, by the following speakers: **Drs. David K. Detweiler, John E. Martin, John T. McGrath, Frederick Leaver, Raymond Fagan,** and **Israel Live.**

Guest speakers for the semester were **Drs. H. Ticehurst,** Redbank, N. J.; **L. Kaschula** and **F. R. Beaudette,** Rutgers University, New Brunswick, N. J.; **Joseph Millar,** Deal, N. J.; **A. H. Quin,** Kansas City, Mo., president of the AVMA; and **C. D. Van Houweling,** director of Livestock Regulatory Programs, U.S.D.A. Agricultural Research Service. The delegate to the AVMA convention in Seattle, **Charles Garvin,** also gave his report.

At the first meeting, Dean Mark Allam presented the following student prizes and awards: the Borden Award, Bernard Levine; Anatomy

Prize, Edward Mallinson; Arthur D. Goldhaft Prize, Robert Tashjian; and 1914 Class Medal, Steve Hastings.

The Chapter is compiling a file of veterinarians who will employ students during the summer, and is also raising funds for the construction of a new student lounge.

The following officers will serve the Chapter during the spring semester: Irving Lutsky, president; Charles Garvin, president-elect; Wendell Cooper, secretary; and Howie Lawson, treasurer.

s/JAMES F. MOCK, *Retiring Secretary.*

WOMEN'S AUXILIARY

How Can the AVMA Auxiliary Most Effectively Serve Its Members?—One of the most effective ways any organization can serve its members is by having *active* members. Any national organization has the difficulty of feeling close to its widely scattered membership and, conversely, the individual states find the same true. It is my feeling that projects such as the Senior Student Loan Fund can do just that, but the states must cooperate in having more women attend the national conventions so they may bring back the inspiration and spirit of the conventions. I, myself, have found a closer tie with the aims and ideals of the AVMA Auxiliary and, although I knew of the Student Loan Fund, did not appreciate the tremendous needs for more help from each state. The *Auxiliary News* is a great stimulus and I am sure that the coming years will prove its worth. To women who have not joined, and to those who are members, it can emphasize the need of help and invite participation.

Perhaps a "question box" could be inaugurated in the Auxiliary column in the JOURNAL, where states could compare notes on activities or problems that arise. Perhaps, also, a resumé of controversial issues might be listed in the *Auxiliary News* prior to the national convention so that state auxiliaries could discuss, decide, and instruct their delegates.—*Mrs. A. F. North, Jr., Foothill Rd., Somerville, N. J.*

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We each have the most interest in, and enthusiasm for, organizations in which we participate actively. To many veterinarian's wives, the AVMA Auxiliary is an organization they know little about unless they attend the AVMA annual meetings.

No invitation is necessary to become a member of the Women's Auxiliary to the AVMA. We welcome all interested women. The dues are $1.00 per year. There is an additional membership fee of $1.00 for the first year, making a total of $2.00 for the first year.
Write to:
Mrs. C. M. Rodgers, membership secretary, Blandinsville, Ill.

Wider representation on the executive board would strengthen ties between the AVMA Auxiliary and its affiliated auxiliaries. Also, by shortening the progression of officers, more women could take an active part in the work of the AVMA Auxiliary. As more women take an active part, interest in auxiliary work and membership will grow. As interest and membership grow, so will the potential of the AVMA Auxiliary to serve the profession.—*Mrs. L. J. Miller, Lincoln, Ill.*

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A great many of our members and potential members are not especially interested in the necessary business which must be conducted by the Auxiliary to the AVMA at the annual meeting; therefore, they do not attend. Since most of them, particularly the younger ones, are actually helping their husbands with their practices, if only by answering the telephone, couldn't we have a session devoted to some of their problems—a program devoted to inspirational and helpful talks given by some of our own members who have helped their husbands establish and carry on their practices, something of the type of program which most of the student chapter auxiliaries have while in school.

One of the main reasons our husbands go to conventions is that they may get the inspiration and help which only being with other veterinarians can give them. As an Auxiliary, should not we provide the same inspiration and help for the wives, the same "take home" ideas which our husbands get. Even though a wife were not actively interested in her husband's practice, a talk on "Ethics of a Veterinarian's Wife," which after all are not too different from the ethics of a veterinarian, would make her realize some of the problems which her husband has to face.—*Mrs. Lloyd C. Moss, 501 Locust St., Fort Collins, Colo.*

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One of the most effective ways that our Auxiliary may be of service is to work with the student auxiliaries. Composed of the young women, they, as wives of veterinary students, are eager to learn the things that will make them efficient co-workers with their husbands when they get into their chosen fields. Their ethics are high. Soon they will be carrying on the work of the AVMA Auxiliary and they will be a great help to the profession as they become leaders in their local communities.—*Mrs. J. D. Grossman, Westerville, Ohio.*

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Notice to Delegates to House of Representatives Women's Auxiliary to the AVMA.—The Curtis Hotel has been selected as the Women's Auxiliary headquarters and a block of rooms has been set aside for the delegates to the house of representatives. We have been informed that the Curtis Hotel is closer to the Auditorium than the hotel selected for the men's headquarters, so it will not be a hardship on your husband to stay at the Curtis.

"Since housing is going to be extremely tight in Minneapolis, we should take advantage of

every room that has been set aside for AVMA members, and it would be unfortunate if some of the return post-paid reservation cards were not used." The above is an excerpt from a letter written to our secretary, Mrs. F. R. Booth, by Dr. H. E. Kingman, Jr., assistant executive secretary of the AVMA.

As soon as you are designated your state's representative, please write for your card to: Mrs. R. W. Gold, 3816 Highland Dr., Salt Lake City, Utah.

s/MRS. L. R. RICHARDSON, *President.*

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Annual Christmas Bazaar of Pennsylvania Student Auxiliary.—On Dec. 3, 1954, the Women's Auxiliary to the University of Pennsylvania Student Chapter of the AVMA held its annual Christmas bazaar auction in Pearson Hall, which was decorated in the Christmas tradition.

Two sophomore students did a fine job of auctioning the articles on display. The prices were "right" so that everyone was pleased with their purchases. A beautiful, handmade, gold-and-white woolen stole made by Mrs. Sam Scheidy was raffled for $40. The bakery table and the coffee and cookie table were popular and profitable as were four beautiful cakes that were auctioned off Chinese style.

The Bazaar, which brought in a total of $287.84 for the auxiliary, furnished good fellowship and real pre-Christmas festivity. All the committees deserve a pat on the back for their good work in making it such a success.

s/JEAN C. CUSHING, *Corresponding Secretary.*

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Kansas Auxiliary.—At the January, 1955, meeting of the Women's Auxiliary to the Kansas Veterinary Medical Association, the following officers were elected: Mrs. A. W. Brecheisen, Garnett, president; Mrs. R. E. Bogue, Wichita, vice-president; Mrs. J. A. Porter, Jr., Fredonia, secretary-treasurer; and Mrs. E. L. Boley, Wichita, historian. Mrs. Boley has held the post of historian since the auxiliary was organized.

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Nebraska Auxiliary.—The Women's Auxiliary to the Nebraska Veterinary Medical Association met in Lincoln on Dec. 1-3, 1954. During the business session, the following officers were elected: Mrs. L. C. Shaw, Geneva, president; Mrs. Carl Brillhart, Madison, vice-president; and Mrs. J. H. Magilton, David City, secretary-treasurer.

s/MRS. J. H. MAGILTON, *Secretary.*

APPLICATIONS

Applicants — Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative By-Laws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., the names of applicants residing within the jurisdictional limits of the constituent associations shall be published once in the JOURNAL.

The following applicants have been certified as members of the Constituent association that has jurisdiction over the area in which the applicant resides. This certification was made by the secretary of the constituent association in accordance with Section 2, Article X, of the administrative By-Laws.

First Listing

ATKINSON, HERBERT M.
59 "G" St., Lemoore, Calif.
D.V.M., Iowa State College, 1945.

BELKIN, PAUL V.
6100 W. Florissant Ave., St. Louis, Mo.
D.V.M., Vienna Veterinary College, 1944.

BELL, STANLEY R.
832 13th Ave., S.W., Calgary, Alta.
D.V.M., Ontario Veterinary College, 1954.

CARLTON, ROBERT E.
137 S. State Rd., Upper Darby, Pa.
V.M.D., University of Pennsylvania, 1945.

FOGLE, CHARLES W., JR.
408 E. Main St., Leipsic, Ohio.
D.V.M., Ohio State University, 1951.

JACOBSON, O. H.
239 W. 13th, S., Salt Lake City, Utah.
D.V.M., Colorado A. & M. College, 1933.

KELLER, DON J.
Rt. 4, Cookeville, Tenn.
D.V.M., Alabama Polytechnic Institute, 1949.

MOORE, JOHN F.
2975 E. Pacific Coast Highway, Long Beach, Calif.
D.V.M., Texas A. & M. College, 1947.

NEMISH, J. MICHAEL
Old Shore Rd., Rio Grande, N. J.
V.M.D., University of Pennsylvania, 1942.

OSTAPCHUK, PETER J.
641 Ashland Ave., St. Paul, Minn.
D.V.M., Ludwig Maximilian University, Munich, Germany, 1949.

RICHMAN, SILAS
7927 Long Meadow Rd., Pikesville, Md.
D.V.M., Cornell University, 1936.

ROCKWELL, WILLIAM V.
7923 Brookpark Rd., Rivera, Calif.
D.V.M., State College of Washington, 1942.

SCOTT, MARION L.
42 W. Market St., Akron, Ohio.
D.V.M., Ohio State University, 1919.

TATE, MILTON L.
Rt. 1, Kennett, Mo.
D.V.M., Middlesex University, 1944.

THEORET, JEAN R.
5103 Wellington, Verdon, P. Q.
M. V., École de Médecine Vétérinaire, St. Hyacinthe, P. Q., 1954.

Applicants — Not Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative By-Laws, as revised at the an-

nual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., notice of all applications from applicants residing outside of the jurisdictional limits of the constituent associations, and members of the Armed Forces, shall be published in the JOURNAL for two successive months. The first notice shall give the applicant's full name, school, and year of graduation, post office address, and the names of his endorsers.

First Listing

VENUS, MARCELINA B.
348-D P. Campa St., Sampaloc, Manila, P.I.
D.V.M., University of Philippines, 1951.
Vouchers: J. B. Aranez and J. A. Solis.

Second Listing

BERRY, VICTOR H., Box 11, Ernest Harmon AFB., Stephenville, N. F.

PRATHER, ELWIN R., Box 1100, Honolulu, Hawaii.

1954 Graduate Applicants

The following are graduates who have recently received their veterinary degree and who have applied for AVMA membership under the provision granted in the Administrative By-Laws to members in good standing of student chapters. Applications from this year's senior classes not received in time for listing this month will appear in later issues. An asterisk (*) after the name of a school indicates that all of this year's graduates have made application for membership.

First Listing

University of California

MURDOCK, MATTHEW L., D.V.M.
7145 Arlington Ave., Arlington, Calif.
Vouchers: G. D. Fettit and E. A. Rhode.

SCHLINGMAN, HERMAN C., D.V.M.
2520½ 11th, Baker, Ore.
Vouchers: T. J. Hage and E. A. Rhode.

Colorado A. & M. College

HARVEY, JACK G., D.V.M.
249 S. Cottage, Salem, Ore.
Vouchers: H. E. Rider and F. G. Rankin.

Ohio State College

LEGGE, MATTHEW E., D.V.M.
1515 Oleander Drive, Bartow, Fla.
Vouchers: P. J. Myers and J. B. Crum.

Ontario Veterinary College

HARRISON, KEITH B., D.V.M.
Box 46, Plainfield, Ont.
Vouchers: J. F. Cote and F. J. Milne.

Texas A. & M. College

JONES, HOWARD H., JR., D.V.M.
403 E. Long St., Stephenville, Texas.
Vouchers: G. C. Rich and B. B. McCollum, Jr.

OGDEN, DONALD I., D.V.M.
Palestine Veterinary Hospital, Palestine, Texas.
Vouchers: H. A. Smith and J. P. Delaplane.

Tuskegee Institute

WHITE, JOHN H., JR., D.V.M.
Box 538, Tuskegee Institute, Ala.
Vouchers: G. W. Cooper and E. T. Braye.

Second Listing

Iowa State College

WILSON, JOHN L., D.V.M., 1305 Bessie St., Lawton, Okla.

Texas A. & M. College

CARDELHAC, PAUL T., D.V.M., c/o Veterinary Hospital, Oklahoma A. & M. College, Stillwater, Okla.

GRIFFIN, CARL D., D.V.M., 630 Hamilton Ave., Menlo Park, Calif.

SPRINGER, LEWIS N., D.V.M., Greer Veterinary Hospital, Dublin, Va.

U. S. GOVERNMENT

Veterinary Personnel Changes.—The following changes in the force of veterinarians in the U.S.D.A. Agricultural Research Service are reported as of Jan. 21, 1955:

NEW APPOINTMENTS

Wilhelm L. Avots, Frankfort, Ky.
A. Taw Ayers, Baltimore, Md.
Marion T. Cox, Reno, Nev.
Roscoe L. Drake, Atlanta, Ga.
Normal L. Garlick, Sacramento, Calif.
William L. Hanawalt, Chicago, Ill.
Ross E. Meaders, Jr., Fort Dodge, Iowa.
James F. Mitchell, San Francisco, Calif.
Samuel R. Parker, San Francisco, Calif.
Lowell L. Spruiell, Fort Worth, Texas.

CANCELLATION OF APPOINTMENTS

Kenneth N. Staples, Milwaukee, Wis.
Harvey W. Young, Jefferson City, Mo.

DEATHS

Edward M. Fitzgerald, Los Angeles, Calif.
Harry F. Fern, San Antonio, Texas.

MILITARY FURLOUGHS

Walter E. Brewer, St. Louis, Mo.
George W. Spangler, Topeka, Kan.

SEPARATION (Military Service)

Euclid C. Sharman, Mexico City, Mex.

RESIGNATIONS

Maurice S. Batson, Phoenix, Ariz.
William L. Black, Albuquerque, N. M.
Stanley J. Dowds, Albuquerque, N. M.
John C. Fletcher, Phoenix, Ariz.
Edward J. Hills, Mexico City, Mex.
Bob M. Mathis, Phoenix, Ariz.
Richard E. Mott, Sacramento, Calif.
Leonard A. Thompson, Olympia, Wash.
Donald E. Watt, Phoenix, Ariz.

RETIREMENTS

A. Taw Ayers, Salisbury, Md.
Charles F. Barnes, South St. Paul, Minn.
Alta R. Bruner, Detroit, Mich.
Charles M. Chase, Denver, Colo.
John T. Draper, Columbus, Ohio.
Harold W. Householder, Des Moines, Iowa.
Lawrence J. Lewis, Madison, Wis.
Samuel R. Parker, San Francisco, Calif.
Calvin A. Trapky, Rochester, N. Y.

TRANSFERS

John B. Champlin, from Phoenix, Ariz., to Nashville, Tenn.

William A. Goodfellow, from Fort Worth, Texas, to Phoenix, Ariz.

Ormond J. Hummond, from Baltimore, Md., to Washington, D. C.

Howard W. Johnson, from Washington, D. C., to Beltsville, Md.

Klemens F. Johnson, from Spokane, Wash., to Omaha, Neb.

Earl M. Jones, from Mexico City, Mex., to Fort Worth, Texas.

John R. Langridge, from San Antonio, Texas, to Fort Worth, Texas.

John H. Lynch, from San Antonio, Texas, to Fort Worth, Texas.

Jorden E. Rasmussen, from Olympia, Wash., to Cheyenne, Wyo.

Frarie C. Smalley, from Mexico City, Mex., to Atlanta, Ga.

Russell D. Williamson, from Richmond, Va., to Washington, D. C.

Richard M. Zirkle, from Beltsville, Md., to Albuquerque, N. M.

AMONG THE STATES AND PROVINCES

The deadline for News copy is the 24th of the month, two months preceding the month of issue.

Alabama

Central Association.—At a meeting of the Central Alabama Veterinary Association Dec. 15, 1954, at Gunter Air Force Base, the following officers were installed: Lt. Col. Robert L. Hummer, Gunter Air Force Base, president; Drs. J. H. Milligan, Montgomery, vice-president; and G. J. Phelps, Jr., Montgomery, secretary-treasurer.

Lieutenant Colonel Hummer addressed the group, outlining a proposed program for the following year; and a report of progress on the brucellosis control program for the state was given by **Dr. B. N. Lauderdale,** veterinarian in charge, Animal Disease Eradication Branch, ARS.

s/LLOYD J. NEURAUTER, *Chairman, Public Relations Committee.*

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Death of Dr. E. S. Winters.—Dr. Everett S. Winters, professor of physiology and therapeutics in the School of Veterinary Medicine, Alabama Polytechnic Institute, died at his home in Auburn, Dec. 25, 1954, at the age of 60. Dr. Winters, who had been in ill health for about a year, had planned to retire Jan. 1, 1955.

Dr. Winters received his B. S. degree from Clemson College and his D.V.M. degree from the School of Veterinary Medicine, Alabama Polytechnic Institute, in 1918. During World War II, he served as acting dean of the veterinary school while Dean R. S. Sugg was in the Army.

He was a member of Phi Zeta, Alpha Psi, Pi Kappa Alpha social fraternity, and of the AVMA.

Dr. Winters' wife, the late Ruby Gaston Winters, died in the spring of 1954.

Surviving are one daughter, Mrs. H. M. Burt, Ormond-by-the-Sea, Fla.; one son, David G., Knoxville, Tenn.; one grandson, Everett S. Winters, II; and one brother, Rhett Winters, Washington, D. C.

Dr. E. S. Winters

s/M. K. HEATH, *Resident Secretary.*

Arizona

State Association.—The annual meeting of the Arizona Veterinary Medical Association was held at the El Conquistador Hotel in Tucson on Dec. 1-2, 1954, with more than 100 veterinarians in attendance.

The following guest speakers addressed the group: **Drs. Wallace H. Fuller** (Ph.D.), associate professor in Agricultural Chemistry, University of Arizona; **Bartley Cardon** (Ph.D.), research director of Arizona Flour Mills and Erly Fat Corp., Tucson; **Jack Howarth,** experiment station, University of California, Davis; **Reginald A. Stocking,** Glendale, Calif.; **W. W. Putney,** North Hollywood, Calif.; **F. E. Eads,** Parke, Davis and Co., Detroit, Mich.; **Donald Miller,** veterinarian in charge, ARS, Phoenix; **Jack King,** state veterinarian, Phoenix; **Arthur Present,** M.D., radiologist, Tucson; **William P. Johnson,** Lederle Laboratories, Pearl River, N. Y.; and **Bruce Farquharson,** Phoenix.

During the business session, the following officers were elected: Drs. George S. Calderwood, Chandler, president; John L. Hinds, Tucson, president-elect; and E. R. Hinshaw, Buckeye, secretary-treasurer. The executive board consists of the following: Drs. George S. Calderwood; John L. Hinds; E. R. Hinshaw; R. W. Adami, Tucson; B. C. Ham, Yuma; W. Snodgrass, Glendale; and W. F. Condon, Tucson.

The 1955 meeting is tentatively scheduled to be held in Chandler on December, 4-6.

s/E. R. HINSHAW, *Secretary.*

Colorado

Dr. Miller Elected to State Senate.—On Nov. 2, 1954, Dr. Norman J. Miller, Eaton, was elected to his second consecutive four-year term as state senator from Weld County. Prior to that, he had been a member of the

Dr. Norman J. Miller

Colorado State House of Representatives for several years. Dr. Miller, who received the AVMA award at the annual meeting of the AVMA in Seattle, has long been active in both civic and professional activities.

s/R. K. ANDERSON, *Resident Secretary.*

District of Columbia

District Association.—The District of Columbia Veterinary Medical Association held their first quarterly meeting of 1955 at the Army Medical Graduate School, Walter Reed Hospital, on January 18. The following officers were installed for the ensuing year: Lt. Col. T. C. Jones, president; Drs. I. G. Cashell, first vice-president; C. L. Gooding, second vice-president; and C. G. Durbin, secretary-treasurer.

Dr. S. F. Scheidy, Sharp and Dohme, Inc., West Point, Pa., presented a travelogue of his recent trip to European and Scandinavian countries with particular emphasis on veterinary education in these countries. Dr. Scheidy also spoke on the activities of the Executive Committee of the AVMA.

s/C. G. DURBIN, *Secretary.*

Georgia

Resolution to Outlaw Virulent Hog Cholera Virus.—Because of the all-time low incidence of hog cholera in the state, the Georgia Veterinary Medical Association recently passed a resolution to the state authorities recommending that the use of virulent hog cholera virus as an immunizing agent be outlawed. The Association is anticipating eventual complete eradication of hog cholera and wishes Georgia to join Alabama, Tennessee, and Mississippi where steps to outlaw the virulent virus have already been taken.

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Atlanta Society.—At the Jan. 11, 1955, meeting of the Atlanta Veterinary Society, the following officers were installed: Drs. C. C. Rife, president; George Patton, Jr., vice-president; and J. L. Christopher, Smyrna, secretary-treasurer. The Society meets the second Tuesday of every month at the Elks Home on Peachtree St.

s/C. L. BROMLEY, JR., *Retiring Secretary.*

Indiana

State Association.—The seventy-first annual meeting of the Indiana Veterinary Medical Association which was held at the Severin Hotel, Indianapolis, Jan. 12-14, 1955, was one of the largest and best in attendance, general interest, and quality of program that the Association has experienced. Total registration exceeded 500 of whom nearly 400 were veterinarians.

The program on the first afternoon and evening was devoted to small animal topics and on the other two days to large animal subjects. At the business session on the last day, the following new officers were elected: Drs. Roe King, Sheridan, president; J. E. Jordan, Indianapolis, president-elect; R. W. Worley, South Bend, vice-president; L. M. Borst, Jr., Indianapolis, secretary-treasurer. The Association also decided that, henceforth, veterinarians applying for membership must also belong to one of the district associations in the state. Thirty-eight new members were admitted at this meeting.

The Women's Auxiliary to the state Association, of which Mrs. L. M. Hutchings, Lafayette, was president this past year, also held several sessions, including one at which Mrs. Frank Booth, recording secretary of the AVMA Women's Auxiliary, was honored.

Dr. W. W. Garverick, Zionsville, who has served the Association so capably as secretary-treasurer for a number of years, was presented a scroll attesting to his faithful work in behalf of the membership.

Dr. E. S. Weisner, Goshen, outgoing president, presided at the opening session of the Association meeting and delivered a thoughtful address on a number of important problems facing the veterinary profession in Indiana. The scientific program included the following speakers: **Drs. L. A. Barnes,** U.S.D.A.; **Joe**

Green, state veterinarian, Indianapolis; **Franklin Gruesser,** Akron, Ohio; **R. L. Farrell,** Columbus, Ohio; **Harry J. Magrane, II,** Mishawaka; **F. R. Koutz,** Columbus, Ohio; **Mr. H. George McKay,** Lafayette; **Mr. R. J. Roehl,** Indianapolis; **Julius Fischler,** Elkhart; **Durwood L. Baker,** Ames, Iowa; **J. D. Salisbury,** public health veterinarian, Indiana State Board of Health; **Roy W. Westcott,** South Bend; **G. H. Connor,** Michigan State College, East Lansing; **J. G. Hardenbergh,** executive secretary of the AVMA, Chicago; **A. H. Craige,** Allied Laboratories; **F. N. Andrews,** Purdue University, Lafayette; **J. L. Boydston,** Wauseon, Ohio; **R. C. Klussendorf,** veterinary director, Commercial Solvents, Terre Haute; **Leo Cahalan,** Logansport; **H. E. Smith,** Sioux City, Iowa; and **L. M. Hutchings,** Veterinary Department, Purdue University.

New members of the board of directors elected at this meeting were Drs. Harry Magrane, II, Mishawaka; L. A. Snider, Indianapolis; and L. L. Wroe, Rockport.

s/J. L. KIXMILLER, *Resident Secretary.*

Iowa

Death of Dr. Isaac E. Hayes.—Dr. Isaac E. Hayes, of Waterloo, an associate editor of the JOURNAL, died suddenly as the result of a coronary occlusion shortly after arising on the morning of Jan. 25, 1955. Born April 5, 1911, at Clifton, Ohio, he received his D.V.M. degree at Iowa State College in 1937 and shortly after established a general practice in Waterloo. However, in recent years he confined his activities to equine and small animal practice.

"Ike" was an outstanding guard on his college football team for three years and captain in 1935 when he received All-American mention. He recently attended the Rose Bowl game with his brother, W. W. (Woody) Hayes, coach of the Ohio State team.

As a member of the Veterinary Corps, U. S. Army, from June, 1941, to October, 1945, he saw service as a major in Australia and New Guinea.

Dr. Isaac E. Hayes

Because of his interest in the species, Dr. Hayes was appointed in August, 1954, to represent the equine practitioners as an associate editor of the JOURNAL. As such, he had reviewed a text and submitted abstracts on equine subjects. He frequently served as the toastmaster at veterinary banquets.

He is survived by his widow and two daughters, 15 and 14 years of age, and by a sister and brother.

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Cedar Valley Association.—The December, 1954, meeting of the Cedar Valley Veterinary Medical Association was held at Black's Tearoom in Waterloo with an attendance of 63, the largest in the history of the Association.

The program consisted of a panel discussion on brucellosis eradication, with **Drs. C. W. Brown,** Des Moines, and **John Herrick,** Ames, as panel members and **Dr. I. E. Hayes,** Waterloo, moderator. A very active discussion resulted. One matter of particular interest was that after the first of the year the federal government was to assume the financial obligation of this program.

s/D. A. BUCHANAN, *Secretary.*

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Death of Mrs. Spence.—Mrs. J. H. Spence, Clinton, Iowa, widow of the late well-known Iowa veterinarian, passed away January 16 at the age of 84 years. They were married in Chicago in 1894, then moved to Clinton where Dr. Spence worked with "lumber-yard" horses only for several years before entering general rural practice. Mrs. Spence had been bedfast for some time.

s/GRANT B. MUNGER.

Kansas

Portrait of Dean Leasure Presented to College.—An oil portrait of Dr. E. E. Leasure, dean of the School of Veterinary Medicine at Kansas State College, Manhattan, now hangs in the lobby of the new veterinary hospital.

The portrait, by Artist Dwight Roberts of Kansas City, was presented to the College in behalf of the Kansas Veterinary Medical Association and Women's Auxiliary, the Student Chapter at K.S.C., and the veterinarians of Kansas. It was given in recognition of Dean Leasure's contributions to the field of veterinary medicine at Kansas State, and because of his efforts in carrying the new veterinary hospital from the planning stages to its recent completion. Dr. Leasure has been a member of the veterinary faculty at Kansas State College since 1926 and has been dean since 1948.

The official presentation of the portrait, by

Dr. Jay Reynolds of Great Bend, chairman of the portrait committee, was during the fifty-first annual convention of the Kansas Veterinary Medical Association in Kansas City on Jan. 6-8, 1955.

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Officers of State Association.—At the fifty-first annual convention of the Kansas Veterinary Medical Association on Jan. 6-8, 1955, the following officers were elected: Drs. Marvin J. Twiehaus, Manhattan, president; Thomas J. Leasure, Lawrence, vice-president; and K. Maynard Curts, Kansas City, secretary-treasurer. Dr. Loyce D. Jernigan, Council Grove, was elected (3-year term) trustee at large. Elected as district trustees for one year terms were Drs. E. A. Liebl, Dodge City (Western); R. H. Gump, Wichita (Central); Arthur Carlson, Humboldt (Southeast); and L. A. Latham, Wetmore (Northeast). Other members of the board of directors are Drs. Fred B. Ogilvie, Kansas City, chairman (1956); Merle L. Henrikson, Emporia (1957); and Frank W. Jordan, Abilene, as past president. Dr. Forrest L. Hart, Hiawatha, was elected delegate and Joe F. Knappenberger, Olathe, alternate (4-year terms, to the AVMA House of Representatives.

s/K. MAYNARD CURTS, *Secretary.*

Maine

State Association.—The winter meeting of the Maine Veterinary Medical Association was held at the Elmwood Hotel in Waterville on Jan. 12, 1955.

The program consisted of a motion picture on new livestock diseases, shown by **Dr. G. W. Bree,** Augusta, and a panel discussion of diseases of large and small animals with **Drs. Camille Gardner** and **E. C. Moore** of Lewiston as discussion leaders.

During the evening banquet, Dr. A. E. Coombs of Skowhegan presented the AVMA Humane Act Award to Alan Campbell of East Corinth, who was announced winner of this award at the annual meeting of the AVMA in Seattle, Aug. 23-26, 1954.

s/H. L. CHUTE, *Resident Secretary.*

Maryland

State Association.—The Maryland State Veterinary Medical Association met in the Lord Baltimore Hotel, Baltimore, on Jan. 27-28, 1955.

The program listed the following speakers: **Drs. Walter E. LaGrange** and **F. Kral,** School of Veterinary Medicine, University of Pennsylvania, Philadelphia; **Salo Jonas,** New Haven, Conn.; **Webster H. Brown** (M.D.), Johns Hopkins Hospital, Baltimore; **F. H. Fox,** New York State Veterinary College, Cornell University, Ithaca, N. Y.; **J. R. Church,** Grayson Research Laboratory, College Park; **George Ott,** head of research, Fromm Laboratories, Grafton, Wis.; **John H. Collins,** veterinary medical director, Division of Medicine, U.S. Department of Health, Education and Welfare, Washington, D. C.; and **Robert J. Huebner** (M.D.), Department of Public Health, Bethesda.

At the conference dinner on Thursday evening, Dr. F. Kral spoke on life behind the iron curtain.

s/L. J. POELMA, *President.*

Massachusetts

State Association.—The guest speakers at the January 26 meeting of the Massachusetts Veterinary Association were **Drs. Morris L. Povar,** Providence, R. I.; and **Charles T. Whitney,** Burlington, Vt. The meeting was held in the Hotel Beaconsfield in Boston.

s/C. LAWRENCE BLAKELY, *Secretary.*

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Worcester County Association.—On Jan. 19, 1955, the Worcester County Veterinary Medical Association met at the Hotel Sheraton in Worcester to hear **Dr. Burte Guterman** (M.D.), neuropsychiatrist, discuss epilepsy. The new brucellosis eradication program was also discussed.

s/DONALD W. HEY, *Secretary.*

Missouri

State Association.—The sixty-third annual convention of the Missouri Veterinary Medical Association was held Feb. 21-22, 1955, at the Hotel Jefferson in St. Louis.

The following speakers presented papers at the scientific session: **Drs. W. A. Aitken,** Chicago, editor-in-chief, JOURNAL of the AVMA; **C. A. Brandly,** Department of Veterinary Science, University of Wisconsin, Madison; **T. H. Brasmer,** Danville, Ill.; **E. J. Catcott** and **W. F. Guard,** College of Veterinary Medicine, Ohio State University, Columbus; **O. E. Ellis,** Paris, Mo.; **W. F. Irwin,** Tulsa, president-elect of the American Animal Hospital Association; **G. R. Moore** and **Frank Thorp, Jr.,** School of Veterinary Medicine, Michigan State College, East Lansing; **W. H. Mowder,** Independence; **G. L. Murphy,** Kirkwood; **A. H. Quin,** Kansas City, president of the AVMA; **L. A. Rosner,** state veterinarian Jefferson City; **Lt. Col. Bernard F. Trum,** Agricultural Research Program, A.E.C., Oak Ridge, Tenn.; and **Mrs. Paul T. White,** Indianapolis, Ind.

s/PAUL L. SPENCER, *Secretary.*

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Greater St. Louis Association.—On Jan. 7, 1954, the Greater St. Louis Veterinary Medical Association met at the Sheraton Hotel. The program consisted of motion pictures on surgery.

s/LUTHER E. FREDRICKSON, *Secretary.*

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Personal.—Dr. Thomas A. Fowler (KCV '13), veterinarian for the Woolford Farm in Kansas

City for many years, is shown in *The Blood Horse* (Dec. 18, 1954) passing a stomach tube in a filly foal, preparing for roundworm therapy.

Nebraska

Officers of State Association.—At the December, 1954, meeting of the Nebraska State Veterinary Medical Association, the following officers were elected: Drs. N. W. Kruse, Genoa, president; W. J. Simic, Beatrice, vice-president; and W. T. Spencer, Lincoln, secretary-treasurer. Drs. C. B. Schwab, Fairbury, and H. E. Hedlund, Wahoo, were elected for two-year terms to the board of directors; and Dr. Paul Matthews, Omaha, was appointed resident state secretary. Dr. E. L. Metcalfe, Dewitt, as retiring president, is chairman of the executive board.

s/W. T. SPENCER, *Secretary.*

New Jersey

State Association.—The seventy-first annual meeting of the Veterinary Medical Association of New Jersey was held on Feb. 3-4, 1955, at the Hotel Essex House in Newark.

The following speakers addressed the scientific sessions: **Drs. J. M. McCarthy,** West Englewood; **Wayne H. Riser,** Skokie, Ill.; **Robert F. Way,** School of Veterinary Medicine, University of Pennsylvania, Philadelphia; **William J. Foster,** Clifton; **William G. Magrane,** Mishawaka, Ind.; **Francis H. Fox,** New York State Veterinary College, Cornell University, Ithaca; **Robert B. McClelland,** Buffalo, N. Y.; **Sydney Rosenberg,** Newark; **Arthur F. North, Jr.,** Somerville; **S. F. Scheidy,** Drexel Hill, Pa., chairman of the AVMA Executive Board; **H. F. B. Bartolett,** Freehold; **George H. Hopson,** milk sanitarian, Poughkeepsie, N. Y.; **Peter E. Olsen,** Stelton; **Mr. Albert H. Nevin,** field representative of Essex County for Social Security Administration; and **Dr. Robert R. Shomer,** Teaneck.

s/JOHN R. MCCOY, *Secretary.*

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Northern Association.—The following officers of the Northern New Jersey Veterinary Association were installed at the January 25 meeting in Teaneck: Drs. Harry B. Reele, Ridgefield, president; Seymour Lustig, Englewood, vice-president; and Edward Baker, Englewood, secretary-treasurer. This meeting featured the annual dinner dance of the Association.

s/EDWARD BAKER, *Secretary.*

New York

New York City Association.—The regular meeting of the Veterinary Medical Association of New York City, Inc., was held the evening of Wednesday, Jan. 12, 1955, at the New York Academy of Sciences.

The guest speaker, **Dr. Jean Holzworth,** of the Angell Memorial Animal Hospital, Boston, discussed recent clinical findings on deseases of the cat, with illustrations.

Those serving on the program committee were Drs. Robert L Burkhart, Raphael Meisels, and E. C. Preston.

s/C. E. DECAMP, Secretary.

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Death of Dr. Charles H. Higgins.—Dr. Charles H. Higgins, 79, of Pearl River, a retired executive of the Lederle Laboratories Division, American Cyanamid Company, died Nov. 22, 1954, at Nyack Hospital. He was born on Feb. 23, 1875, in Newtonville, Mass.

Well-known in Canadian scientific circles as a government bacteriologist and pathologist, Dr. Higgins joined Lederle in 1917 to establish the Company's Canadian offices. A year later he moved to their New York office to take charge of sales and advertising. Later he became director of professional services. In 1940, he transferred to the Pearl River plant in a managerial post which he held until his retirement on Dec. 31, 1948, after thirty-one years of service.

Dr. Higgins earned his D.V.M. degree from McGill University, Montreal. Prior to joining Lederle, he served as chief pathologist for the Canadian Department of Agriculture and in 1902 established a laboratory for the Canadian government at William Head Quarantine Station, Victoria, B. C., for the preparation of bubonic plague vaccine and the prevention of the entry of infectious diseases into Canada. In the same year, he established the biological laboratory in Ottawa for the control of diseases.

He was an honor roll (50 year) member of the AVMA; and was also a member of the Pearl River Rotary Club; the Adventurers Club of New York; the American Polar Society; a Fellow of the Royal Microscopial Society of London; past-president of the New York Veteran Druggists Association; a member of the board of trustees, Columbia College of Pharmacy; McGill Graduates Society; British Schools and Universities Club, and other scientific associations.

Surviving are his widow, the former Cora Claiborne; a son, Herbert; and two grandchildren.

North Carolina

Animal Disease Research and Diagnostic Laboratory.—To meet the specific needs for an expanded research program and more adequate diagnostic facilities, two wings and a service area of the North Carolina Animal Disease Research and Diagnostic Laboratory in Raleigh were opened for operation on Aug. 1, 1954. This facility partially fulfills a long-felt need of the livestock industry of North Carolina for a modern, well-equipped laboratory to aid the industry in disease diagnosis and disease control

problems. In the floor plan (fig. 1) the cross-hatched area represents the incompleted portion of the building. The entire building provides about 23,000 sq. ft. of floor space. The completed part of the building cost approximately $14.50 per square foot of floor space, including the cost of the 400-lb.-per-hour carcass-destructor.

The necropsy tables (fig. 2) are the fixed type, 5 by 10 ft., kidney shaped, with stainless steel tops, built to the design of the author and installed for slightly less than $2,000 each. These tables are loaded by an overhead electric hoist tracked on an "I" beam that services the unloading dock, necropsy rooms, and destructor.

The 11 air-lock entrance-type isolation units are of the standard design. The walls of these units, as well as those of the necropsy rooms, are constructed with ceramic glazed cement blocks which affords a smooth surface for cleaning.

The building was designed to function with a staff consisting of an animal pathologist, a virologist, a parasitologist, a physiologist, a bacteriologist, a chief diagnostician, and an assistant diagnostician. It is anticipated that each staff member will be supported by a minimum

Fig. 2—Necropsy tables are the fixed type with stainless steel tops.

Fig. 1—Floor plan of the North Carolina Animal Disease Research and Diagnostic Laboratory at Raleigh.

of one research assistant and one graduate student.

s/J. CLARK OSBORNE.

Oregon

State Association Honors Assistant Secretary of Agriculture.—On Oct. 30, 1954, the Oregon State Veterinary Medical Association

Mr. Ervin L. Peterson

bestowed an honorary membership upon Mr. Ervin L. Peterson, Oregon state director of agriculture. Mr. Peterson was at that time preparing to resign his position with the State of Oregon and journey to Washington, D. C., where he is now serving as assistant secretary of agriculture.

Mr. Peterson had served as state director of agriculture since 1943. Prior to that time, he served as county judge of Coos County and had operated a dairy farm from 1931 until recently.

The honorary membership extended to Mr. Peterson is the second ever bestowed by the Oregon State Veterinary Medical Association. It was conferred as a means of expressing the Association's appreciation of the fine service Mr. Peterson had rendered to the people of the state and in recognition of the splendid spirit of cooperation and understanding which Mr. Peterson gave to the veterinary profession. He firmly believes that the first line of defense in animal disease control problems is the practicing veterinarian.

s/EDWARD L. HOLDEN, *Resident Secretary.*

Oklahoma

State Association.—The fortieth annual meeting of the Oklahoma Veterinary Medical Association was held at the Biltmore Hotel in Oklahoma City on Jan. 9-11, 1955.

The following speakers presented papers at the scientific session: **Drs. Francis T. Candlin,** Denver, Colo.; **G. T. Easley,** Sulphur; **Jacques Jenny,** School of Veterinary Medicine, University of Pennsylvania, Philadelphia; **E. W. Jones** and **L. E. McDonald,** School of Veterinary Medicine, Oklahoma A. & M. College, Stillwater; **Joe F. Knappenberger,** Ashe Lockhart, Inc., Kansas City, Mo.; **William V. Lumb,** School of Veterinary Medicine, Colorado A. & M. College, Fort Collins; **Mark L. Morris,** consultant in animal nutrition, Topeka, Kan.; **A. H. Quin,** Kansas City, Mo., president of the AVMA; and **Mr. Roy H. Semtner,** attorney at law, Oklahoma City.

The new officers of the Association are Drs. Lewis H. Moe, Stillwater, president; Paul E. Phillips, Shawnee, vice-president; and C. H. Fauks, secretary-treasurer.

While not a record meeting from the standpoint of attendance, this convention nevertheless ranks among the best ever held by this Association. Social activities included a mixer hour with square dancing, refreshments, and other entertainment; a good fellowship hour; and a banquet and dance which was attended by nearly 200.

s/C. H. FAUKS, *Secretary.*

Pennsylvania

Keystone Association.—The January 26 meeting of the Keystone Veterinary Medical Association was held at the University of Pennsylvania. **Dr. Robert Brodey,** Philadelphia, spoke on diseases of the ear in animals, covering the surgical as well as medical phase.

The Keystone Association and the Philadelphia branch of the American Pharmaceutical Association held a joint professional meeting on March 9 at the Philadelphia College of Pharmacy. This was a pioneer event which it is hoped will promote better understanding and closer cooperation between professional groups.

s/LEONARD KRAWITZ, *Secretary.*

Texas

Dr. Turk's Peru Mission.—Dr. R. D. Turk, head of the Department of Veterinary Parasitology, Texas A. & M. College, returned Dec. 27, 1954, from a three-month sojourn in South America, during which he was engaged in studies on parasite problems (principally in cattle) in Peru. The studies were under the auspices of the Foreign Operations Administration, Institute of Inter-American Affairs, Division of Food Supply and Nutrition.

Dr. Turk spent October, November, and most of December in Peru, and seven days in Ecuador en route home. Most of his time in Peru was spent east of the Andes in the jungle area, near Pacullpa on the Ucayali River. (This is the Amazon region of Peru, the Ucayali River being one of the two main tributaries of the

Amazon.) Dr. Turk also had an opportunity to spend two weeks in northern Peru at Piura, and a few days in the high country around La Oroya and Huancayo. He crossed the Andes six times—four by car and two by plane.

He also visited the veterinary school at the University of San Marcos at Lima. According to Dean Ramos Saco, they are planning to build a new school and hope to greatly expand and strengthen their training in veterinary medicine.

Dr. Turk is of the opinion that Peru has great possibilities as a livestock-producing country, particularly in the region east of the Andes. However, there is considerable need for increased veterinary research and services in solving serious livestock problems, including parasitisms that are prevalent in this area.

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Kelser Hall Perpetuates Memory of Famous Veterinarian.—Kelser Hall, a memorial to the outstanding contributions made to veterinary science by the late Brigadier General R. A. Kelser, was dedicated at the Medical Field Service School, Fort Sam Houston, Texas, on Jan. 14, 1955. General Kelser was a former chief of the Army Veterinary Corps and, when he retired after twenty-eight years of service, was dean of the School of Veterinary Medicine, University of Pennsylvania, from 1946 to the time of his death in 1952.

General Kelser was awarded the Distinguished Service Medal for his superior leadership and foresight in expanding the Army Veterinary Corps during World War II. He was co-author of the text "Manual of Veterinary Bacteriology" and author of a long list of other articles.

A native of the District of Columbia, General Kelser obtained his degree in veterinary medicine from George Washington University (1914) and both his master's and doctor of philosophy degrees from American University (1922-23).

Mrs. Eveline Kelser, widow of the General and now a resident of Lompoc, Calif., was present for the dedication ceremony.

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Death of Dr. Harry F. Kern.—Dr. Harry F. Kern, 68, long-time federal service employee, died suddenly on Dec. 28, 1954, in Laredo.

Born Dec. 20, 1886 in Fort Collins, Colo., Dr. Kern graduated from the Colorado Agriculture College in 1911. He accepted a veterinary position with the Philippine government in 1911 and served in that capacity until July, 1916. He transferred to the Bureau of Animal Industry, Department of Agriculture, reporting for duty in the States in September, 1916, working until January, 1917, then returning to the Philippine service until August, 1923. He then returned to the Department of Agriculture until December, 1925, at which time he was employed by the Government of El Salvador until June, 1927. Dr. Kern returned to the United States in June of 1927 and was in continuous employment of the Department of Agriculture until his death. His total federal service was approximately forty-two years.

Dr. Kern gave many years of faithful service to the Bureau of Animal Industry, particularly in the control and eradication of the Texas fever tick, and port work along the Mexican-United States border.

He was a member of the AVMA, having first joined in 1915.

s/C. L. GOODING.

Wisconsin

State Association.—The thirty-ninth annual meeting of the Wisconsin Veterinary Medical Association was held Jan. 12-14, 1955, at the Schroeder Hotel in Milwaukee.

The following speakers addressed the scientific session: **Drs. J. R. Fesler**, Janesville; **K. E. Lloyd**, West Bend; **L. J. Swanson**, Bonduel; **R. E. Tully**, Elkhorn; **R. E. Hauke**, Eau Claire, Wis.; **E. W. Krueger**, Evansville; **R. A. Garman**, Tomah; **G. L. Lynch**, Milwaukee; **J. L. Kuenster**, Lancaster; **G. J. Marold**, Milwaukee; **Roger Tetzlaff**, Morrisonville; **A. E. Moats**, Cedarburg; **H. H. Buchholz**, Wilton; **George Lang**, Barron; **Jacques Jenny**, School of Veterinary Medicine, University of Pennsylvania, Philadelphia; **G. R. Moore**, School of Veterinary Medicine, Michigan State College, East Lansing; and **H. J. O'Connell**, Madison.

Dr. A. M. McDermid, Ladysmith, was toastmaster at the annual banquet held in the Crystal Ballroom of the Schroeder Hotel.

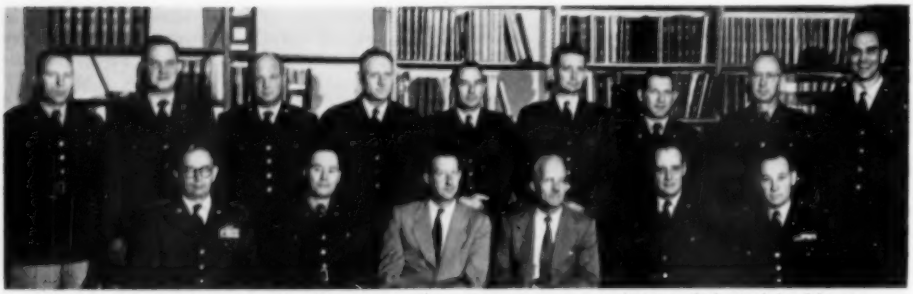
During the business meeting, the following officers were elected: Drs. H. W. Jacobson, Denmark, president; T. H. Ferguson, Lake Geneva, vice-president; W. L. Richards, Morrisonville, treasurer; and B. A. Beach, Madison, secretary.

s/B. A. BEACH, *Secretary*.

VETERINARY MILITARY SERVICE

Veterinary Panel, Association of Military Surgeons.—Brigadier General Wayne O. Kester, assistant for veterinary services, Office of the Surgeon General, Headquarters U.S. Air Force, presided at the veterinary section panel meeting held in conjunction with the meeting of the Association of Military Surgeons in Washington, D. C., on Dec. 1, 1954. The panel was well attended by veterinarians, particularly from the Washington area, as well as individuals representing many other medical categories.

The program, prepared under chairmanship of Col. Ralph W. Mohri and Lt. Col. Jack H. Hempy, included the following speakers: **Drs.**



Participants and instructors in the second advanced course in veterinary radiological health presented by the Oak Ridge Institute of Nuclear Studies, Oak Ridge, Tenn., during November, to senior veterinary officers of the Air Force and Army.

Front row (left to right)—Col. James R. Karr, Col. Philip R. Carter, Dr. Ralph T. Overman, Dr. C. S. Shoup Col. Robert R. Miller and Col. William E. Jennings.

Back row—Lt. Col. Bernard F. Trum, Lt. Col. William B. Snodgrass, Lt. Col. John R. Nettles, Col. Willard M. Van Sant, Lt. Col. Morley C. Clark, Lt. Col. Jack H. Hempy, Lt. Col. Walter T. Carll, Col. Curtis W. Betzold, and Major U. S. Grant Kuhn, III.

M. R. Clarkson, deputy administrator, U.S.D.A. ARS; **B. T. Simms,** Animal Disease and Research Program, U.S.D.A.; **James H. Steele,** chief, Veterinary Service, Communicable Disease Center, Public Health Service; **Lt. Col. Bernard F. Trum,** Medical Research Laboratory, Oak Ridge, Tenn.; and **Dr. C. D. Van Houweling,** director, Livestock Regulatory Programs, Agricultural Research Service, U.S.D.A.

Of particular interest at this meeting was Colonel Trum's presentation. He brought out some important features on the latest training opportunities that are offered veterinary officers in the area of veterinary health physics such as the newly established course at Oak Ridge.

Some of those (including approximately 50 veterinarians from all sections of the United States) who attended the course on diseases of laboratory animals which was held at the Armed Forces Institute of Pathology on Dec. 6-11, 1954 (see February JOURNAL, 1955: 163). Colonel T. C. Jones, V.C., U. S. Army, chief of the Veterinary Pathology Section of the Institute, was director of the course.

Officers who attended the Air Force-Army Command Veterinarians Conference, Headquarters, U. S. Air Force in Europe, Wiesbaden, Germany, on Sept. 15, 1954.

(Left to right)—Lt. Col. Ernest S. Watkins, Lt. Col. Harry Lancaster, Col. Rowland W. Rushmore, Major Frederick Weil, Col. Maurice W. Hale, Lt. Col. Rowland O. Scott, Major Charles M. Muniz, Lt. Col. Houston Odom, Lt. Col. Joseph H. Berger, Major Wilbert M. Klett, Captain M. L. McGown, Major Val A. Tomayko, and Capt. Gilbert L. Ralston.

Air Force and Army Command Veterinary Conference.—Recently a conference of U. S. Air Force and Army veterinarians stationed in Europe convened at Headquarters U. S. Air Force in Europe, Wiesbaden, Germany, for the purpose of discussing current veterinary problems in that area.

Major General Harry G. Armstrong, command surgeon for the Air Forces in Europe, former Surgeon General of the Air Force, and honorary member of the AVMA, opened the meeting. **Colonel Rowland W. Rushmore,** command veterinarian for the Air Forces in Europe, and **Col. Maurice W. Hale,** chief veterinarian of the U. S. Army in Europe, led the discussions covering such areas of veterinary military medicine as food inspection, establishment inspections, the sentry dog program, and zoonoses. Considerable time at the meeting was centered on the role of the veterinarian in the newly established sentry dog program and clearly delineating areas of responsibility in this program.

The eighty-eighth class of veterinary officers completed (Feb. 4, 1955) the course at the Army Medical Service Meat and Dairy Hygiene School in Chicago. The class visited AVMA headquarters on February 2 and heard talks on the work of the Association.

Front row (left to right)—Capt. William R. Strieber, instructor; Capt. Harrison S. Martin, instructor; Major Glenn A. Washburn, instructor; Lt. Col. Wayne D. Shipley, director of training; Col. Philip R. Carter, commandant; Major Edward P. Hornickel, instructor; Major James B. Young, instructor; Capt. John A Postle, adjutant.

Second row—First Lt. Gerald L. Hayes; Capt. Millard L. Tierce, Jr.; First Lt. Dan G. Parmer, U.S.A.F; First Lt. Robert E. Pearson; First Lt. Newell P. Netsch; Capt. Hilding M. Strandberg, U.S.A.F.; and First Lt. Elwin E. Branz.

Third row—First Lt. Samuel T. Bickley; First Lt. Jerry L. Adcock; First Lt. Eugene H. Brekke; Capt. Paul D. Lampru; First Lt. John W. Ellis; Capt. James H. McNamara, U.S.A.F.; First Lt. William B. Godden, U.S.A.F; First Lt. Gerald R. Snyder.

Back row (left to right)—First Lt. Hollis H. Clark, Jr.; First Lt. William A. Wolff; First Lt. Charles W. James; First Lt. George F. Fischer; Capt. Charles T. Bush, U.S.A.F; First Lt. Donald L. Piermattei; First Lt. Thomas W. Weatherford.

BIRTHS

Dr. (KSC '50) and Mrs. James A. McKetterick, Mexico, Mo., announce the birth of a son, James A., IV, on Nov. 7, 1954.

Dr. (ONT '49) and Mrs. H. L. Chute, Orono, Maine, announce the birth of a daughter, Hazel Lee, on Nov. 18, 1954.

Dr. (UP '48) and Mrs. Maurice Skyer, Newburg, N. Y., announce the birth of a son, Kenneth Thomas, on Dec. 14, 1954.

Dr. (MSC '49) and Mrs. Orville C. Krause, Armada, Mich., announce the birth of their second son, David Lester, on Dec. 28, 1954.

Dr. (COR '54) and Mrs. Charles S. Delahunt, Keene, N. H., announce the birth of a son, Michael VanCleef, on Dec. 29, 1954.

Dr. (TEX '45) and Mrs. Donald L. Williams, Papantla, Vera Cruz, Mex., announce the birth of a daughter, Donna Glee, on Jan. 19, 1955, in Mexico City, Mex.

DEATHS

Donald C. Beaver (MSC '18), Detroit, Mich., died Aug. 10, 1954. Dr. Beaver, who also held an M.D. degree and had studied at the Mayo Foundation, was pathologist and director of laboratories at Woman's Hospital in Detroit and was also president of the Detroit Institute of Cancer Research.

James Crowl (USC '27), 60, Centreville, Md., died Jan. 10, 1955. Dr. Crowl was a state and federal veterinarian. He is survived by his widow and a daughter.

Edward M. Fitzgerald (OSU '17), San Diego, Calif., died Nov. 19, 1954. Dr. Fitzgerald had been employed by the U. S. Bureau of Animal Industry.

William A. Fuqua (API '20), Blakely, Ga., died Nov. 13, 1954. Dr. Fuqua had retired from practice.

★**Joseph E. Greer** (KSC '25), 59, Dublin, Va., died Jan. 9, 1955. Dr. Greer had practiced in Pulaski for twenty-one years and in Dublin since 1952. He was a member of the American Animal Hospital Association, the Virginia Veterinary Medical Association, and of the AVMA.

★**Isaac E. Hayes** (ISC '37), 43, Waterloo, Iowa, died Jan. 25, 1955, of a coronary occlusion. An obituary appears on page 252 of this JOURNAL.

Charles H. Higgins (MCG '96), 79, Pearl River, N. Y., died Nov. 22, 1954. An obituary appears on page 254 of this JOURNAL.

John M. Hodgens (KSC '14), 82, Morrilton, Ark., died Sept. 23, 1954. Dr. Hodgens, who had retired only a year ago, had been a member of the AVMA. He is survived by his widow and two daughters.

★**Harry F. Kern** (COL '11), 68, San Antonio, Texas, died Dec. 28, 1954. An obituary appears on page 257 of this JOURNAL.

Jens Madsen (ISC '01), 86, San Diego, Calif., died Sept. 15, 1954. Dr. Madsen was for many years employed by the U. S. Bureau of Animal Industry.

★**Robert D. Newlon** (ONT '35), New Brighton, Pa., died Oct. 13, 1954. Dr. Newlon is survived by his widow. He was a member of the AVMA.

Harrie W. Peirce (HAR '00), 82, West Medford, Mass., died Jan. 25, 1955. Dr. Peirce, former chief veterinary health officer and director of the Massachusetts Division of Livestock Disease Control, was elected to honorary membership in the Massachusetts Veterinary Association in 1951. He had been a member since 1906.

★**George S. Rey** (SF '08), 75, Visalia, Calif., died Jan. 12, 1955. Dr. Rey began his practice in Dinuba, Calif., and moved to Visalia in 1911 where he practiced until his retirement in 1952. He is survived by his widow and two sons, one of whom, Robert S. (MSC '37), practices in Del Mar, Calif.

★**Peter F. Runyon** (UP '12), 68, Freehold, N. J., died in November, 1954. Dr. Runyon, who joined the AVMA in 1913, was made a life member of the Association in 1952.

C. B. Shore (UP '17), 60, Browns Mill, N. J., died Jan. 18, 1955. Dr. Shore had retired from veterinary practice in 1945 and had been a realtor since that time. He had been a member of the AVMA.

★**Norris L. Townsend** (UP '99), 84, Topeka, Kan., died Oct. 11, 1954. Dr. Townsend, widely known in the U. S. Bureau of Animal Industry and other organizations, had lived in San Mateo, Calif., after his retirement in 1939, until August, 1954, when he returned to Topeka, Kan. Dr. Townsend was a member of the Kansas Veterinary Medical Association, the U. S. Livestock Sanitary Association, the National Association of Federal Veterinarians and the AVMA. He will long be remembered for his ability and good judgment in directing the forces serving under him.

Robert L. Wheeler (UP '23), 58, Delta, Pa., died Sept. 16, 1954. Dr. Wheeler had served in World War I. He had practiced in Harford and York counties for more than thirty years.

Warren S. Wilson (TH '14), 62, Buffalo, Minn., died Oct. 1, 1954, of a heart attack. Dr. Wilson, a general practitioner, was a member of the Minnesota Veterinary Medical Society and had been a member of the AVMA.

★**Everett S. Winters** (API '18), 60, Auburn, Ala., died Dec. 25, 1954. An obituary appears on page 250 of this JOURNAL.

★ Indicates members of the AVMA.

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COMING MEETINGS

Notices of Coming Meetings must be received by 4th of month preceding date of issue

Manitoba Veterinary Association. Annual meeting. Winnipeg, Man., March 14-15, 1955. E. J. Rigby, 156 Princess St., Winnipeg 2, Man., secretary.

Alabama Veterinary Medical Association. Annual meeting. Thomas Jefferson Hotel, Birmingham, Ala., March 20-22, 1955. M. K. Heath, Small Animal Clinic, School of Veterinary Medicine, Alabama Polytechnic Institute, Auburn, Ala.

Washington State College. Spring conference for veterinarians. College of Veterinary Medicine, State College of Washington, Pullman, Wash., April 4-6, 1955. R. W. Leader, chairman, Spring Conference Committee.

Pennsylvania, University of. Postgraduate short courses for veterinarians. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa., April 4-7, 1955. M. W. Allam, dean.

Animal Disease Research Workers in the Southern States. Annual meeting. Animal Pathology Building, Experiment Station Farm, University of Kentucky, Lexington, Ky., April 5-6, 1955. Paul L. Piercy, University of Georgia, Athens, Ga., secretary.

Central Iowa Veterinary Medical Association. Annual meeting. Warden Hotel, Fort Dodge, Iowa, April 21, 1955. H. Engelbrecht, P. O. Box 797, Fort Dodge, Iowa, secretary.

Oregon State Veterinary Medical Association. Klamath Falls, Ore., April 30, 1955. E. L. Holden, P. O. Box 445, Oswego, Ore., secretary.

American Animal Hospital Association. Annual meeting. Hotel Statler, Detroit, Mich., May 4-7, 1955. Wayne H. Riser, Skokie, Ill., executive secretary.

Georgia Veterinary Medical Association. Annual meeting. Biltmore Hotel, Atlanta, Ga., May 29-31, 1955. Chas. C. Rife, 420 Edgewood Ave., N.E., Atlanta, Ga., secretary.

Texas, A. & M. College of. Conference for veterinarians. Memorial Student Center, College Campus, College Station, Texas, June 2-3, 1955. Alvin A. Price, chairman.

Maryland State Veterinary Medical Association. Summer meeting. George Washington Hotel, Ocean City, Md., June 23-24, 1955. John D. Gadd, Cockeysville, Md., secretary.

Alabama, Conference for Veterinarians. School of Veterinary Medicine, Alabama Polytechnic Institute, Auburn, Ala., July 24-27, 1955. R. S. Sugg, dean.

American Veterinary Medical Association. Annual meeting. Municipal Auditorium, Minneapolis, Minn., Aug. 15-18, 1955. J. G. Hardenbergh, 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

New York State Veterinary Medical Society. Annual meeting. Hotel Statler, New York, N. Y., Sept. 14-16, 1955. Joan S. Halat, 803 Varick St., Utica, N. Y., acting executive secretary.

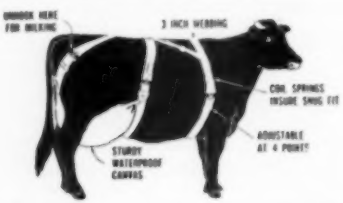
Oklahoma A. & M. College. Conference for veterinarians. School of Veterinary Medicine, Oklahoma A. & M. College, Stillwater, Okla., Sept. 29-30, 1955. J. D. Friend, Department of Veterinary Anatomy, chairman.

New England Veterinary Medical Association. Annual meeting. Poland Springs House, Poland Springs, Maine, Oct. 2-5, 1955. C. Lawrence Blakely, 180 Longwood Ave., Boston, Mass., secretary.

Foreign Meetings

Third International Congress of Biochemistry. Brussels, Belgium, Aug. 1-6, 1955. Claude Liebecq, 17 Place Delcour, Liege, Belgium, secretary general.

(Continued on p. 28)



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Atlanta (Ga.) Veterinary Society, the second Tuesday of every month at the Elks Home on Peachtree St., Atlanta, Ga. J. L. Christopher, Smyrna, Ga., secretary.

Baltimore City Veterinary Medical Association, the second Thursday of each month, September through May (except December), at 9:00 p.m. at the Park Plaza Hotel, Charles and Madison St., Baltimore, Md. Harry L. Schultz, Jr., 9011 Harford Rd., Baltimore, Md., secretary.

Bay Counties Veterinary Medical Association, the second Tuesday of each month. E. Paul, Redwood City, Calif., secretary.

Cedar Valley Veterinary Association, the second Monday of each month, except January, July, August, and October, at Black's Tea Room, Waterloo, Iowa. D. A. Buchanan, Grundy Center, Iowa, secretary.

Central Alabama Veterinary Association, the first Thursday of each month. G. J. Phelps, Jr., Montgomery, Ala., secretary.

Central Arizona Veterinary Medical Association, the second Tuesday of each month. F. R. Benton, 302 South Country Club Dr., Mesa, Ariz., secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. Herbert Piper, 4575 Ventura Ave., Fresno, Calif., secretary.

Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel in Greensboro, N. Car. R. T. Copeland, 1800 Walker Ave., Greensboro, N. Car., secretary.

Central Indiana Veterinary Medical Association, the second Wednesday of each month. L. M. Borst, 3315 Shelby St., Indianapolis, Ind., secretary.

Chicago Veterinary Medical Association, the second Tuesday of each month. Mark E. Davenport, Jr., 215 S. Edgewood Ave., La-Grange, Ill., secretary.

Coastal Bend (Texas) Veterinary Association, the second Wednesday of each month. J. Marvin Prewitt, 4141 Lexington Blvd., Corpus Christi, Texas, secretary.

Coon Valley Veterinary Association, the second Wednesday of each month, September through May, at the Bradford Hotel, Storm Lake, Iowa. D. I. Lee, Sac City, Iowa, secretary.

Cuyahoga County (Cleveland, Ohio) Veterinary Medical Association, the first Wednesday of each month, September through May (except

(*Continued on p. 30*)

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(COMING MEETINGS—*continued from p. 28*)

January), at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. Ed. R. Jacobs, 5522 Pearl Rd., Cleveland, Ohio, secretary.

East Bay (Calif.) Veterinary Medical Association, bimonthly, the fourth Wednesday. John T. Turver, 1201 E. 12th St., Oakland 6, Calif., secretary.

Eastern Illinois Veterinary Medical Association, the first Thursday of March, June, September, and December. A one-day clinic is held in May. R. P. Link, College of Veterinary Medicine, University of Illinois, Urbana, Ill., secretary.

Eastern North Carolina Veterinary Medical Association, the first Friday of each month. John D. Baker, Kinston, N. Car., secretary.

Fayette County Veterinary Association, Iowa, the third Tuesday of each month, except in July and August, at Pa and Ma's Restaurant, West Union, Iowa. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Florida, North-East Florida Veterinary Medical Association, the second Thursday of each month, time and place specified monthly. J. O. Whiddon, 829 San Marco Blvd., Jacksonville, Fla.

Greater St. Louis (Mo.) Veterinary Medical Association, the first Friday of the month (except July and August) at the Sheraton Hotel, Spring Ave. and Lindell Blvd. Luther E. Fredrickson, Room 25, Municipal Courts Bldg., St. Louis, Mo., secretary.

Houston Veterinary Medical Association, Houston, Texas, the first Thursday of each month. Edward Lepon, Houston, Texas, secretary-treasurer.

Jacksonville (Fla.) Veterinary Medical Association, the second Thursday of each month, time and place specified monthly. L. D. Barrett, Rt. 8, Box 572, Jacksonville, Fla., secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday evening of each month, in Louisville or within a radius of 50 miles. Dr. W. E. Bewley, P.O. Box "H", Crestwood, Ky., secretary.

Kansas City Small Animal Hospital Association, the first Monday of each month, at alternating hospitals. W. F. Noland, 7504 Metcalf, Overland Park, Kan., secretary.

Kansas City Veterinary Medical Association, the third Tuesday of each month at Exchange Hall, ninth floor, Livestock Exchange Bldg., 1600 Genessee St., Kansas City, Mo. Busch Meredith, 800 Woodswether Rd., Kansas City 5, Mo., secretary.

Kern County (Calif.) Veterinary Medical Association, the first Thursday of each month. W. W. Stiern, 17 Niles St., Bakersfield, Calif., secretary.

Keystone (Pa.) Veterinary Medical Association,

(*Continued on p. 32*)

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the fourth Wednesday of each month at the University of Pennsylvania School of Veterinary Medicine, 39th and Woodland Ave., Philadelphia 4, Pa. Raymond C. Snyder, 39th and Woodland Ave., Philadelphia 4, Pa., secretary.

Kyowva (Ky., Iowa, Va.) Veterinary Medical Association, the second Thursday of each month in the Hotel Prichard, Huntington, W. Va., at 8:30 p.m. Harry J. Fallon, 200 5th St. W., Huntington, W. Va.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from October through April at the Academy of Medicine, 91 Lincoln Park South, Newark, N. J. Myron S. Arlein, 2172 Millburn Ave., Maplewood, N. J., secretary.

Michiana Veterinary Medical Association, the second Thursday of each month, at the Hotel LaSalle, South Bend, Ind. L. D. Ramsay, 719 E. Jefferson Ave., La Porte, Ind., secretary.

Michigan, Southeastern Veterinary Medical Association, the second Thursday of every month, September through May. Gilbert Meyer, 14003 E. Seven Mile Road, Detroit 5, Mich., secretary.

Mid-Coast Veterinary Medical Association, the first Thursday of every even month. George McCollister, 2146 Broad St., San Luis Obispo, Calif., secretary.

Mid-State (Mich.) Veterinary Medical Association, the fourth Thursday of each month with the exception of November and December. Robert E. Kader, 5034 Armstrong Rd., Lansing 17, Mich., secretary.

Milwaukee Veterinary Medical Association, the third Tuesday of each month, at the Hali-Way House, Blue Mound Rd. George F. Lynch, 201 West Devon St., Milwaukee 17, Wis., secretary.

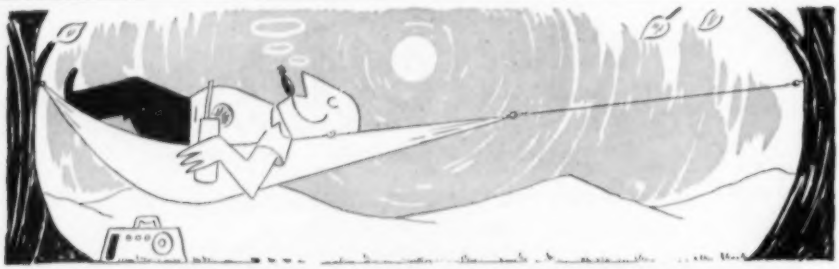
Mobile-Baldwin Veterinary Medical Association, the first Tuesday of each month at the Hotel Admiral Simmes, Mobile, Ala. C. Eric Kennedy. Mobile. Ala., secretary

Monterey Bay Area (Calif.) Veterinary Medical Association, the third Wednesday of each month. Lewis J. Campbell, 90 Corral de Tierra, Salinas, Calif., secretary.

New Castle County (Del.) Veterinary Association, the first Tuesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. Arthur P. Coogan, 2102 New Road, Wilmington 5, Del., secretary.

New York City, Inc., Veterinary Medical Association of, the first Wednesday of each month at the New York Academy of Sciences, 2 East 63rd St., New York City. C. E. DeCamp, 43 West 61st St., New York 23, N. Y., secretary.

(*Continued on p. 34*)



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Northeast Iowa-Southern Minnesota Veterinary Association, the first Tuesday of February, May, August, and November at the Wisneslick Hotel, Decorah, Iowa, 6:30 p.m. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Northern Colorado Veterinary Medical Society, the second Monday of each month. William H. Beckenhauer, School of Veterinary Medicine, Colorado A. & M. College, Fort Collins, Colo., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday of each month at the Casa Mana in Teaneck, N. J. Edward Baker, 568 Grand Ave., Englewood, N. J., secretary.

Northern San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month. Ernest Makino, Patterson, Calif., secretary.

Oklahoma County Veterinary Medical Association, the second Wednesday of every month except July and August. Carl L. Clark, 127 N. W. 23rd St., Oklahoma City, Okla., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month at 7:00 p.m. in the Antlers Hotel, San Bernardino, Calif. William J. Kelber, 1111 West A St., Ontario, Calif., secretary.

Orange County (Calif.) Veterinary Medical Association, the third Thursday of each month. Donald E. Lind, 2643 N. Main St., Santa Ana, Calif., secretary.

Peninsula (Calif.) Veterinary Medical Association, the third Monday of each month. T. D. Harris, San Mateo, Calif., secretary.

Piedmont (N. Car.) Veterinary Medical Association, the last Friday of each month at 7:00 p.m. in Mull's Motel in Hickory, N. Car. W. W. Dickson, Box 1071, Gastonia, N. Car., secretary.

Pima County (Ariz.) Veterinary Medical Association, the third Wednesday of each month in Tucson. E. T. Anderson, 8420 Tanque Verde Rd., Tucson, Ariz., secretary.

Portland (Oregon) Veterinary Medical Association, the second Tuesday of each month, in the Auditorium of the Upjohn Company. Victor T. Oliver, 9705 S.W. Barbur Blvd., Portland 19, Ore., secretary.

Redwood Empire Veterinary Medical Association, the third Thursday of each month. H. M. Strandberg, 203 D St., Petaluma, Calif., secretary.

(*Continued on p. 361*)

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Saginaw Valley (Mich.) Veterinary Medical Association, the last Wednesday of each month. S. Correll, Rt. 1, Midland, Mich., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month except July and August. E. R. Quortrup, 4005 Rosecrans St., Building 2, San Diego, Calif., secretary.

San Fernando Valley (Calif.) Veterinary Medical Association, the second Friday of each month at Eaton's Restaurant in Studio City, Calif. R. A. Button, 5954 Van Nuys Blvd., Van Nuys, Calif., secretary.

Santa Barbara-Ventura Counties Veterinary Medical Association, Friday evenings every sixth week. Dee Wodars McDermott, 5879 Hollister, Coleta, Calif., secretary.

Seattle Veterinary Medical Association, the third Monday of each month in the home of Dr. Fred Cummings, 5828-5th, N.W., Seattle, Wash.

Southeastern (Mich.) Veterinary Medical Association, the fourth Wednesday of every month, September through May. Gilbert Meyer, 14003 E. Seven Mile Rd., Detroit 5, Mich., secretary.

Southern California Veterinary Medical Association, the third Wednesday of each month. Howard C. Taylor, 2811 West Olive St., Burbank, Calif., secretary.

South Florida Veterinary Society, the third Tuesday of each month, at the Seven Seas Restaurant, Miami, Fla. J. C. Matlock, 4561 Ponce DeLeon Blvd., Coral Gables, Fla., secretary.

South Puget Sound (Wash.) Veterinary Medical Association, the second Thursday of each month except July and August. Jo Walker, Agriculture Experiment Station, Puyallup, Wash., secretary.

Tenth District (Ind.) Veterinary Medical Association the third Thursday of each month. W. E. Sharp, Union City, Ind., secretary.

Tulsa (Okla.) Veterinary Medical Association, the third Thursday of each month in Directors' Parlor of the Brookside State Bank, Tulsa, Okla. Merle S. Watts, 5302 E. 11th St., Tulsa, Okla., secretary.

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(Continued on p. 42)

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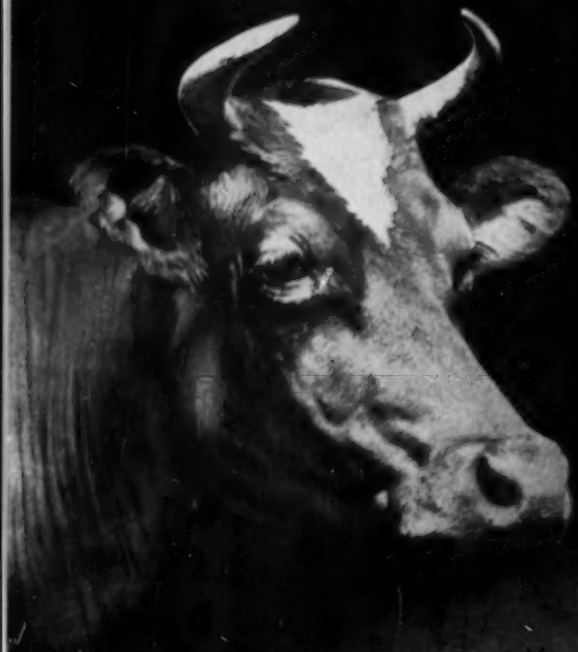
QUALITY DOG FOODS FOR OVER 30 YEARS

NEW HIGH POTENCY



Advantages

HIGH POTENCY

Greater adrenocortical stimulation with smaller doses.

HIGH PURITY

Low content of foreign solids and low content of proteins.

EASE OF ADMINISTRATION

Reduced likelihood of local sensitivity reactions on injection.

ECONOMY

Eliminates inconveniences and expense of frequent injections.

SQUIBB

TREATMENT FOR KETOSIS

PROLACTHYL* HP

veterinary

SQUIBB Corticotropin Gel (Highly Purified)

Most cases respond promptly to single injection

● Highly purified corticotropin (ACTH) in Prolacthyl HP Veterinary produces greater adrenocortical stimulation unit for unit than older forms of corticotropin – with rapid reversal of ketosis symptoms.

Most cases respond to a single dose of 5.0 cc. to 10 cc. (equivalent to 300 U.S.P. units to 600 U.S.P. units).

Blood sugar levels are usually raised to normal limits within 24 hours. Increased milk production may generally be expected within 3 days.

Supplied in vials of 10 cc. Each cc. provides 60 U.S.P. units of corticotropin. Order from your veterinary supply house.

For further information, write: SQUIBB, *Veterinary Department*, 745 Fifth Avenue, New York 22, N. Y.

Sold only to veterinarians

*PROLACTHYL is a trademark.

A NAME YOU CAN TRUST

Veterinarian wanted for Detroit animal hospital; $125 with living quarters available. Address "Box K 12," c/o JOURNAL of the AVMA.

Veterinarian with practice experience, preferably in hog belt, wanted by manufacturer of veterinary biologicals. Headquarters in Sioux City, Iowa or Indianapolis, Ind.; salary, bonus, car, life and health insurance plans, retirement plan. Address "Box J 19," c/o JOURNAL of the AVMA.

Remittance must accompany advertisement

Veterinarian wanted to take charge of diagnostic laboratory for poultry in conjunction with mixed practice. Laboratory experience necessary. Address Dr. L. P. Bailey, P.O. Box 54, Piqua, Ohio.

Bovine and Equine

Safety

MOUTH SPECULUM

- Safety locking feature withstands 800 lbs pressure.
- Allows adequate room for inserting arm from either side.
- Attachment available for passing stomach tube through mouth makes this operation simpler and more humane.

Price $57.50 POST PAID For stomach tube attachment add $15

Sold to veterinarians only by makers of famous MacAllan Ear-Cropping Forms. Send check or money order, or phone Lansing 2-3797.

MacALLAN LABORATORIES
Route No. 2, Box 420 Lansing, Michigan

U.S. Armed Forces Surplus

BLOOD BOTTLES

Baxter Transfuso Vac

50 cc. 4% Sodium Citrate w/v in Water Anticoagulant

$3.00 per doz. Minimum 6 doz.

F.O.B. Richmond, Va.

Hull St. Outlet
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P.O. Box 4101 Richmond, Va.

Veterinarian with Maryland license wanted to take over my practice while I go on vacation. Attractive salary. Address "Box K 16," c/o JOURNAL of the AVMA.

Veterinarian with New Jersey license wanted for complete charge of dog and cat hospital. Address "Box J 10," c/o JOURNAL of the AVMA.

Wanted—Positions

Experienced relief veterinarian available; small animals only. New York and New Jersey licenses. Address D.V.M., 1007 80th St., North Bergen, N. J.

Graduate veterinarian, AVMA-approved school, interested particularly in city, county, or state job. Experienced, 2 years in private practice, 3 years of meat inspection. Address "Box K 5," c/o JOURNAL of the AVMA.

Capable small animal veterinarian desires position in, or lease of, small animal hospital. Prefer southern California as health of family forces move to warmer climate. Can furnish excellent references as to ability; 30 years old, financially responsible. Address "Box K 8," c/o JOURNAL of the AVMA.

(*Continued on p. 56*)

Veterinarian Wanted

Prominent eastern ethical pharmaceutical manufacturer has opening for young veterinarian whose responsibility will include experimentation and maintenance of animal colony. Send complete resume and salary requirements. Address "Box K 29," c/o JOURNAL of the AVMA.

FUNGASARC

for the effective treatment of skin conditions

Destroys fungi; sarcoptes scabei canis; demodex canis; mites; fleas; lice. Repels ticks. Non Staining; not greasy; has no objectionable odor, destroys odors of external origin. Non Toxic; may be used daily in recommended dilution. Concentrated; one gallon makes four.

Gallon **$13.95** **Makes 4 gallons**

Quart **$4.00** **Makes a gallon**

Available nationally through well known Distributors

Osco Chemical Company, Inc.

P.O. Box 2157, Atlanta 1, Georgia

PHILEAS FOGG, MEET NELLIE BLY!

ENGINE 93 streaked through Arizona, its eight steel wheels flailing the track. And when the young lady at the controls thought the engineer wasn't looking, she opened up the throttle another notch.

She was Nellie Bly, reporter for the New York World. And she was in a big hurry to reach Jersey City and beat a fictional man in a trip around the globe. The man's name was Phileas Fogg, phlegmatic English hero of a popular novel by M. Jules Verne: *Around The World In 80 Days.*

And beat him she did—in just over 72 days—with only one dangerous incident. A "titled cad" tried to flirt with her in the middle of the Indian Ocean, but even he subsided when she threatened to signal the nearest U. S. man-of-war.

M. Verne cried "bravo!" when he heard her triumph. And all 1890 America cheered. For hers was the authentic American spirit that translates dreams into practical realities.

It's the same spirit that lives in today's 160 million Americans, who—far from incidentally—are the real assets making U. S. Series E Savings Bonds one of the world's finest investments.

Why not profit by your faith in your fellow Americans and yourself? Guard your future, and your country's, by buying Bonds regularly!

It's actually easy to save money—when you buy United States Series E Savings Bonds through the automatic Payroll Savings Plan where you work! You just sign an application at your pay office; after that your saving is done for you. And the Bonds you receive will pay you interest at the rate of 3% per year, compounded semiannually, for as long as 19 years and 8 months if you wish! Sign up today! Or, if you're self-employed, invest in Bonds regularly where you bank. For your own security, and your country's too, save with United States Savings Bonds!

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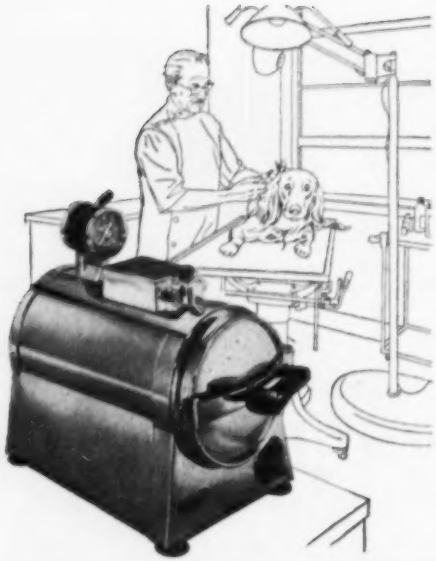

Better sterilization . . . to help you stop *Infectious Hepatitis*

No telling when one of your patients may be a carrier of a Hepatitis-causing virus. It is highly infectious.

Cases show this virus is not airborne. It is transmitted by contaminated instruments. Proper sterilization of needles and instruments is an important step in preventing its spread to other animals.

Autoclave sterilization—once expensive—is now available at a price you can afford. Castle's new "777" Speed-Clave, fully automatic and all stainless steel, costs just $216-$219.

Portable—it weighs 15 lbs. Saves time—gets to sterilizing temperatures in 4-8 minutes!

Get the full story. Mail coupon below.

to: Wilmot Castle Co.
1139 University Avenue, Rochester 7, N. Y.

☐ Send folder on "777" Speed-Clave

Name_____

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City_____ State_____

My veterinary supply dealer is:_____

Castle LIGHTS AND STERILIZERS

Correspondence

Letters of Appreciation

Letters of appreciation have been received in recent weeks from members who were designated either as "Honor Roll" or "Life Members" of the Association at the 1954 annual meeting. Excerpts from these letters follow:

I wish to acknowledge receipt of my Life Membership card and to thank the Board for it. . . I have not been as active as some members but have always tried to be available when called upon . . . . and will always be very much interested in the activities of the Association and the veterinary profession of which I have been a member since 1911. . . . My very best wishes to the membership for continued advances; may 1955 be the best year of all.

s/ Frank Breed,
2940 Georgian Court,
Lincoln 2, Neb.

• • •

Yesterday I received my Life Membership card and certainly appreciate it. With best wishes for the New Year.

s/ Grant B. Munger,
1921 First Ave., S. E.,
Cedar Rapids, Iowa.

• • •

This letter is to acknowledge the card showing me as a Life Member of the Association and wish to express my sincere thanks and appreciation for this courtesy and honor to the officers and members. My whole life has been devoted to the practice of veterinary medicine and to the best interests of our profession, the national and state associations.

s/ H. E. Hershey,
405 Elizabeth St.,
Charleston 21, W. Va.

• • •

I wish to express my appreciation to the Association for placing me on the Honor Roll. It has been a pleasure and has given me a lot of information to be a member all these years (50). Thank you from the bottom of my heart.

s/ W. H. Meadors,
6019 First Ave., S.,
Birmingham 6, Ala.

• • •

Many thanks for your letter informing me of being placed on the Honor Roll. . . . When I graduated in 1904, Dr. C. J. Marshall signed my application. . . . At my class reunion last June, I also received my fifty-year certificate as a graduate. Have also been a member of the

(Continued on p. 45)

WHITE'S ANIMAL CASTRATION

A new textbook for TEACHERS, STUDENTS and PRACTITIONERS.

Price $7.50

For sale by book dealers, also by the Author, George Ransom White M.D., D.V.M., P. O. Lock Box 901, Nashville, Tennessee.

(CORRESPONDENCE—*continued from p. 44*)

Pennsylvania V.M.A. for fifty years—in general practice for fifty years—so have decided not to be too active from now on. Being 74, I can't go as fast as I used to.

s/ S. M. Nissley,
State College, Pa.

• • •

Many thanks for advising me that I am now an Honor Roll member. . . . Until your letter came, I did not realize that fifty years had passed since I joined the AVMA. . . . With all good wishes.

s/ Wm. M. Mac Kellar,
Washington, D. C.

• • •

And a letter from Sir Thomas Dalling who was one of the three honorary members elected last year.

It was with very much pleasure and with a feeling that a great honor had been accorded me when I received your letter of 8 December and the Certificate of (Honorary) Membership of the American Veterinary Medical Association. They were sent on to me from London.

Your Association can rest assured that I deeply appreciate this honor: to have one's humble efforts for the veterinary profession recognized in such a manner by an organization such as the American Veterinary Medical Association gives one a feeling of elation and stirs one to further efforts.

Will you please convey my warm thanks to your Association for this great kindness shown to me. With all good wishes,

Yours sincerely,
s/ T. Dalling, Veterinarian,
FAO, United Nations,
Animal Production Branch,
Agricultural Division, Rome, Italy.

Dear Dr. Aitken:

I would like to suggest that the use of the word "osteoarthritis" in the article entitled "Osteoarthritis in Dogs" in the December, 1954, JOURNAL (p. 462) is incorrect.

The word "osteoarthritis" is synonymous with the terms "hypertrophic arthritis" or "degenerative joint disease", and is usually a senile type of disease marked by thickening of the joints and softening of the articular ends of the bones. I believe that the word "osteoarthropathy" is the correct terminology in this case.

Osteoarthropathy is also known as chronic hypertrophic pulmonary osteoarthropathy and is associated with chronic pulmonary diseases. In osteoarthropathy the most striking change is a marked periosteal proliferation along the shafts of the bones in the distal extremities (especially the metatarsals, metacarpals, radius and ulna and tibia). Therefore, the terms "osteoarthritis" and "osteoarthropathy" denote entirely different pathological conditions, and I believe that this terminology might be very confusing if it is not corrected.

I have checked the *Veterinary Bulletin* and it

(*Continued on p. 48*)

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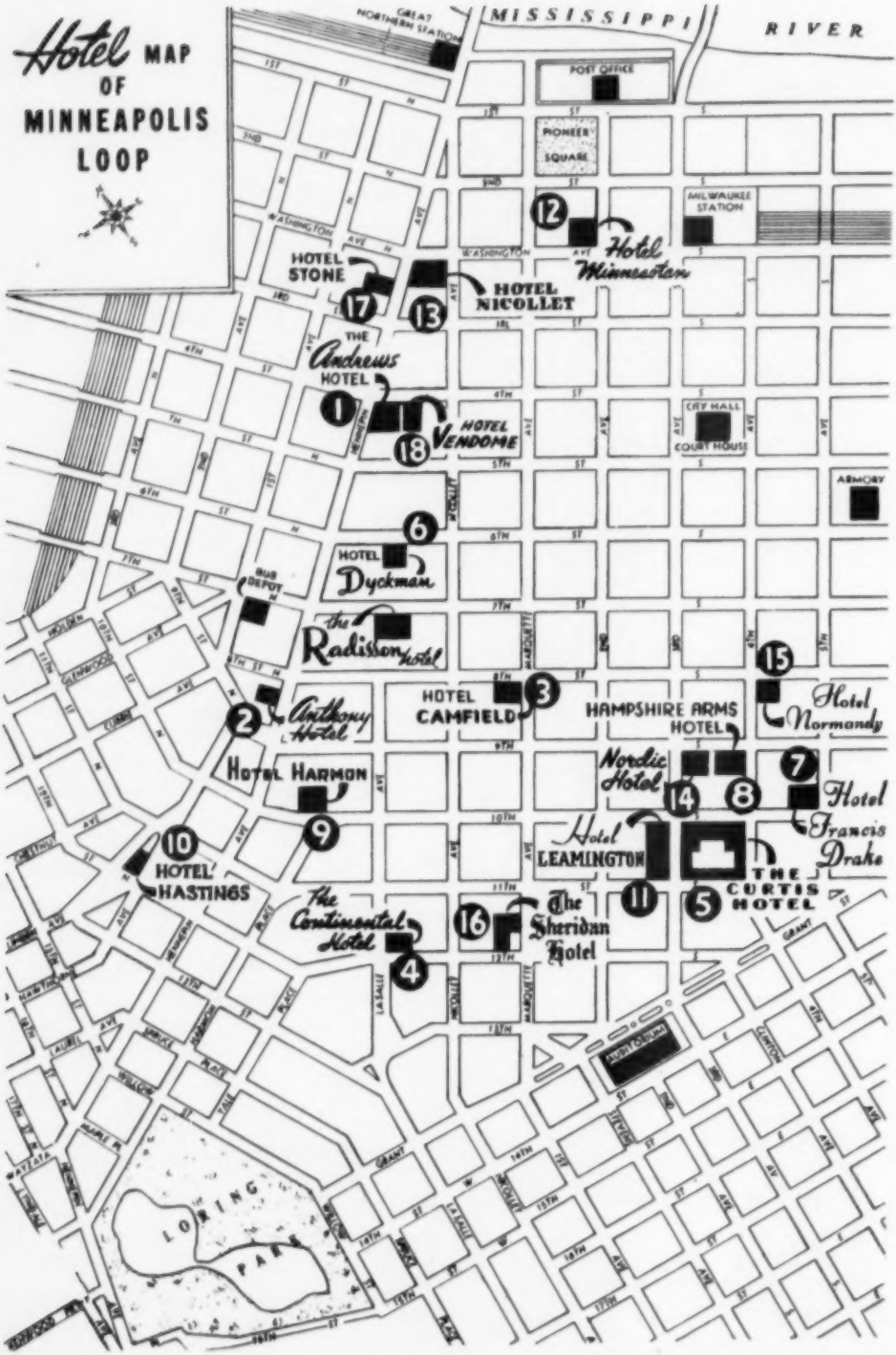
Hotel MAP OF MINNEAPOLIS LOOP
MISSISSIPPI RIVER
GREAT NORTHERN STATION
POST OFFICE
PIONEER SQUARE
MILWAUKEE STATION
Hotel Minnesotan
HOTEL STONE
HOTEL NICOLLET
THE Andrews HOTEL
HOTEL Vendome
CITY HALL COURT HOUSE
ARMORY
HOTEL Dyckman
BUS DEPOT
the Radisson Hotel
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HAMPSHIRE ARMS HOTEL
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The Continental Hotel
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LORING PARK

HOTEL RESERVATIONS — MINNEAPOLIS CONVENTION

Ninety-Second Annual AVMA Meeting, Aug. 15-18, 1955

All requests for hotel accommodations will be handled by a Housing Bureau in cooperation with the Committee on Local Arrangements. The Bureau will clear all requests and confirm reservations.

HOTELS AND RATES

HOTEL	SINGLE	DOUBLE	TWIN BEDS
1. Andrews	$4.00-6.50	$5.75-9.50	$7.00-10.00
2. Anthony	$3.25-4.50	$4.50-6.50	$6.00-8.00
3. Camfield	$3.50-5.00	$4.50-6.00	$6.00-8.00
4. Continental	$4.00	$5.00	$6.00
5. Curtis	$5.00-6.50	$6.50-8.00	$8.50-11.00
6. Dyckman	$4.00-7.50	$7.00-11.50	$8.00-12.50
7. Francis Drake	$5.00-8.00	$6.50-9.00	$8.50-10.50
8. Hampshire Arms	$3.50-4.50	$5.00-6.00	$6.00-7.50
9. Harmon	$3.50	$4.50	$6.00
10. Hastings	$3.50-5.00	$6.00-7.00	$8.00
11. Leamington	$6.00-12.00	$8.00-14.00	$9.50-16.00
12. Minnesotan	$3.50-5.25	$5.00-7.00	$7.00-8.00
13. Nicollet	$5.50-10.50	$8.50-14.00	$9.00-14.00
14. Nordic	$4.00	$5.00-6.00	$7.00
15. Normandy	$5.00-7.00	$7.50-8.00	$9.00-10.00
16. Sheridan	$4.50-5.50	$6.00-7.00	$8.00
17. Stone	$3.25	$5.00	$6.00
18. Vendome	$3.00-4.00	$4.50-5.50	$5.50-6.00

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HOTEL RESERVATION FORM — AVMA CONVENTION — MINNEAPOLIS

To: HOUSING BUREAU

Minneapolis Convention and Visitors Bureau
1750 Hennepin Avenue
Minneapolis, Minn.

Please make reservations indicated below:

———— Single room(s) at $_____

———— Double bed rooms at $_____

———— Twin-bed rooms at $_____

———— Suite (specify type of accommodations wanted)

(Three choices MUST Be Shown)

First choice hotel _____

Second choice hotel _____

Third choice hotel _____

Arriving on (date) _____ at _____ a.m. _____ p.m.

Leaving on (date) _____ at _____ a.m. _____ p.m.

Room will be occupied by (attach list of additional names if necessary).

Your Name (Print or Type) _____

Street Address _____ City and State or Province _____

Compare
PRICE
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and you will always
Prescribe
MASTICS®

ACTUAL SIZE
THE ORIGINAL
UDDER BOUGIE

MASTICS P&S
100,000 units penicillin
50,000 mcg. dihydrostreptomycin

MASTICS act fast because medication in high concentration is quickly dispersed throughout the quarter. Improvement often noted in 12 hours.

MASTICS contain no grease, no wax, no insoluble materials to remain in the udder retarding antibiotic action. MASTICS milk out completely—produce no residue on the strainer.

MASTICS are so effective, cows are returned to the herd more promptly with less loss of production.

LOW IN COST...HIGH IN POTENCY
MASTICS SAVE TIME, MONEY, MILK

WRITE FOR SAMPLES AND PRICES

The Martin Laboratories
West Chester, Penna.

(CORRESPONDENCE—continued from p. 45)

seems that the person who translated the Swiss article made the original error as he interpreted "Osteoarthropathie beim Hund" to mean "osteoarthritis in dogs."

s/ Robert S. Brodey, D.V.M.
Instructor in Veterinary Surgery,
University of Pennsylvania.

Dear Dr. Aitken:

In the October 1954 issue of the JOURNAL on page 294, the work of Calesnick, Harris, and Jones (*Science, 119*:128, 1954) was abstracted. These workers reported that antibiotic feeding caused a large increase in the weight of the thyroid glands together with a decrease in the uptake of radioactive iodine.

This work has been repeated by Libby and Meites (*Science, 120*:354, 1954) and by myself (*Science, 120*:724, 1954). Neither study was able to confirm the goitrogenic effect reported by Calesnick. In no instance were we able to show any thyroid weight increase or lessened I^{131} uptake by aureomycin (chlortetracycline) feeding.

We are all interested in the explanation of the growth-stimulating effect of antibiotics; however this suggestion by Calesnick is not correct. The statements by these workers should not be permitted to go unchallenged.

s/ Wilson C. Grant
Lederle Laboratories Division,
American Cyanamid Co.,
Pearl River, N. Y.

Associated Serum Producers Changes Its Name

A new organization, Associated Veterinary Laboratories, Inc., has been formed to take over the work that has been done for the past twenty years by Associated Serum Producers, Inc. "Veterinary laboratories" is more representative of the business of the various affiliated companies, since "serum producers" did not describe the full line of business.

The organization will continue the campaign to educate the public to a greater use of modern veterinary science and will also continue to utilize its news bureau "The American Foundation for Animal Health," which has disseminated news information widely from coast to coast, through newspapers, radio and farm magazines.

Over a million dollars has been spent to help build prestige for the veterinarian. This includes over 1,400 paid advertisements, 2,400 radio items, 900 news articles, 14,600 motion picture showings to 1,709,000 "live" audiences and 5,000,000 television audiences, yet the Associated Producers feels that it has barely scratched the surface.

Companies which are instrumental in underwriting the cost of the campaign are: Allied Lab-

(Continued on p. 50)

Scarification Tests Show
AFFILIATED BRAND ERYSIPELAS BACTERIN
Gives Good Protection

WHAT IT IS — Affiliated Brand Erysipelas Bacterin is a chemically killed whole bouillon culture of Erysipelothrix rhusiopathiae precipitated and adsorbed by aluminum hydroxide gel, then concentrated.

Pig, challenged by the skin scarification method, shows no evidence of erysipelas 72 days after vaccination with Affiliated Brand Erysipelas Bacterin.

Unvaccinated pig, similarly challenged by the skin scarification method, shows marked evidence of erysipelas infection.

A herd of 145 weanling pigs were vaccinated with Affiliated Brand Erysipelas Bacterin on June 4, 1954. At the same time the entire herd was vaccinated with *Anti-Hog Cholera Serum and Affiliated Brand Hog Cholera Vaccine*. On September 18th (106 days), six pigs from this herd were challenged by the skin scarification method with a virulent culture of E. rhusiopathiae. Four pigs of the six proved to be immune to the infection, while two pigs developed local skin lesions which cleared up in three to four days. This indicates that Affiliated Brand Erysipelas Bacterin protected four out of six pigs for this extended period, while in the 72-day test (above photos) *all* pigs tested were immune.

Twelve poults, ten weeks old, were injected in leg muscle with 2cc of Affiliated Brand Erysipelas Bacterin. These twelve, together with six others that served as unvaccinated controls, were challenged with an intravenous injection of virulent culture. *None* of the vaccinated turkeys showed reaction to the exposure, while five of the six controls died of acute erysipelas.

AN EFFECTIVE, PRACTICAL AND SAFE PRODUCT FOR USE BY GRADUATE VETERINARIANS IN THE PREVENTION OF SWINE AND TURKEY ERYSIPELAS

Present indications are that Affiliated Brand Erysipelas Bacterin produces a good resistance to the disease after several weeks and can be considered as an intermediate product ranking between anti-swine erysipelas serum alone, and simultaneous vaccination with anti-swine erysipelas serum and erysipelothrix rhusiopathiae vaccine.

Affiliated Erysipelas Bacterin is a killed culture. It can't set up new foci of infection. It can be handled by graduate veterinarians without fear of infection or inconvenience. It can be used in states where erysipelothrix rhusiopathiae vaccine is not permitted.

It is safe and practical to use when veterinarians choose to vaccinate swine on premises where there is some doubt as to whether erysipelas infection exists.

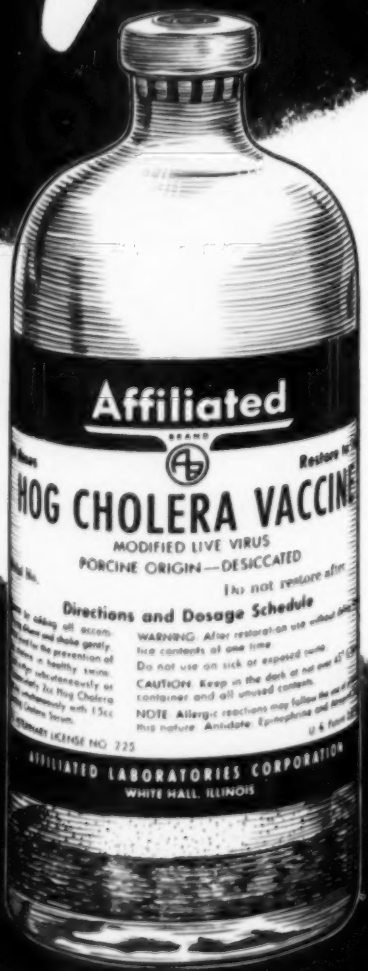
Affiliated Brand Erysipelas Bacterin is available in 50 and 250 cc containers.

AFFILIATED LABORATORIES CORPORATION
WHITE HALL, ILLINOIS

Affiliated BRAND

THE TRULY PROFESSIONAL

Vaccine



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Affiliated
BRAND

Cortone®

ACETATE
(VETERINARY) SALINE SUSPENSION
(CORTISONE ACETATE, MERCK)

When life hangs in the balance

CASE HISTORY: A dog with 2nd and 3rd degree burns covering 25% of the body surface was treated with parenterally administered 'Cortone' and other medication. After 12 days of therapy the burn was healed except for a small area. The animal's appetite and general condition were much improved.

Other indications: Bovine ketosis, hard-pad disease in dogs, and allergic dermatoses, arthritis, and, with antibiotics, in acute fulminating infections of all animals.

Supplied: 'Cortone' Acetate (Veterinary) Saline Suspension 50 mg. per cc.—10 cc. vials. Veterinary literature on 'Cortone' and 'Hydrocortone' available to veterinarians on request.

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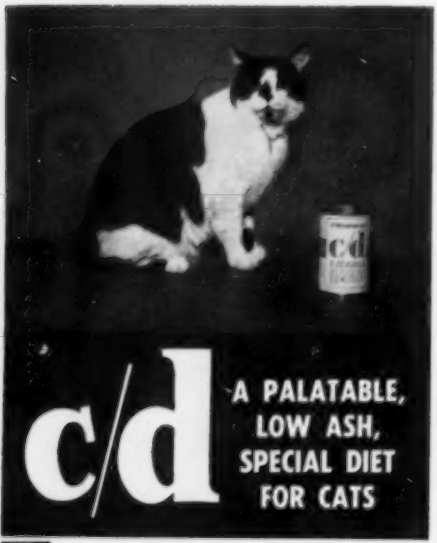

DIAGNOSIS

Castrated male cat with symptoms of urethral obstruction, passing blood stained urine, and frequent attempts at urination.

TREATMENT

Administer anesthesia, carefully check urethra, determine character of and remove obstruction, give fluids parenterally, offer fluid diet temporarily and change to c/d as a permanent diet. See "Key to Prescription Diets" for dosage.

RESULT

If urinary tract is free of fine sand calculi, recurrence is infrequent if kept on c/d.

(Inquiry form for graduate veterinarians only)
HILL PACKING COMPANY, Box 148, Topeka, Kan.
Send information on therapeutic feeding ☐
Send information on other Hill products ☐

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HILL PACKING COMPANY
P.O. Box 148 Topeka, Kan.

(Continued from p. 48)

oratories, Inc., Kansas City, Mo.; Blue Cross Serum Co., Superior, Neb.; The Columbus Serum Co., Columbus, Ohio; Corn Belt Laboratories, Inc., East St. Louis, Ill.; Corn States Laboratories, Inc., Omaha, Neb.; Fort Dodge Laboratories, Inc., Fort Dodge, Iowa; Grain Belt Supply Co., Omaha, Neb.; Gregory Laboratory, Inc., White Hall, Ill.; Jensen-Salsbery Laboratories, Inc., Kansas City, Mo.; Liberty Laboratories, Omaha, Neb.; National Laboratories Corp., Kansas City, Mo.; Norden Laboratories, Lincoln, Neb.; Pitman-Moore Co., Indianapolis, Ind.; Sioux City Serum Co., Sioux City, Iowa; Sioux Fall Serum Co., Sioux Falls, S. Dak.; and Southwestern Serum Co., Wichita, Kan.

Veterinarians Have Two-Way Radios

How three veterinarians and their artificial insemination technician, of the Milledgeville (Ill.) Veterinary Clinic, each has a 30-watt, two-way radio unit in his practice car with which to communicate with their office when within a 20-mile radius, is told by the Motorola "Newsgram" (Sept., 1954). Drs. D. W. Rawson (ISC '43), W. K. Speck (ILL '52), and G. C. Oppenhouse (KSC '39) also have remote control consolettes in their homes, connected by telephone to the office. Thus, they can talk to each other or carry on a private round-table discussion.

The Canine Research Heroine for 1954

A 10-year-old Spitz mongrel, "Flo," won the third annual award made by the National Society for Medical Research as dog research hero of the year. She served for nine years at the Sharp and Dohme pharmaceutical firm in more than 15 research projects involving antibiotic drugs, renal studies, and a drug used in gout treatment. As one result of this research, long-lasting doses of penicillin when combined with benamide can be administered by mouth.—*Bull. M. Res., Sept., 1954.*

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Quick relief for Bone, Bursal or Tendon Lameness
Single Bottle.....$2.00
3 and 1 free.....5.00
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12 and 4 free.....17.00
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Hudson, N. Y.

D•L•V

D•L•V Removes Doubt About Serum

(Standard 10 cc Dose Anti-Hog Cholera Serum)

Field tried and proven on over 1,000,000 hogs with maximum results.

Experimental tests to date have shown that immunity established by D•L•V will persist for the average lifetime of the Hog.

Hog Cholera Vaccine

Modified Live Virus
Vacuum Dried
Porcine Origin

D•L•V

- Does Not Spread Hog Cholera
- Produces Solid Immunity
- Standard Dosage (2 cc. of D.L.V.—10 cc. of Serum)
- Protects Pigs Before Weaning
- Available in 5 Dose — 10 Dose — 20 Dose and 50 Dose Packages
- For further information contact your local veterinary distributor

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POLYOTIC* INTRAMUSCULAR:
100 mg.-500 mg.-1.0 Gm.-5.0 Gm.

POLYOTIC INTRAVENOUS:
100 mg.-2.5 Gm.

POLYOTIC OBLETS®: 4's-6 x 4's

POLYOTIC CAPSULES: 50 mg., 25's-100's;
100 mg., 100's; 250 mg., 16's-100's

POLYOTIC TABLETS: 50 mg., 25's-100's;
100 mg., 25's-100's; 250 mg., 16's-100's

POLYOTIC MASTITIS OINTMENT: ¼ oz.

POLYOTIC COMPOUND MASTITIS OINTMENT: ¼ oz.

POLYOTIC OPHTHALMIC OINTMENT 1%:
6 x ⅛ oz.

POLYOTIC TOPICAL OINTMENT 3%: 1 oz.

POLYOTIC SOLUBLE (Tinted) POWDER:
¼ lb.-½ lb.-1 lb.-5 lb.

AVIANIZED® RABIES VACCINE (Canine):
1 dose-5 x 1 dose-10 doses

AVIANIZED RABIES VACCINE (Cattle): 10 doses

AVIANIZED CANINE DISTEMPER VACCINE:
1 dose-10 x 1 dose

ANTI-CANINE DISTEMPER SERUM AND ANTI-INFECTIOUS CANINE HEPATITIS SERUM: 20 cc. 100 cc.

INFECTIOUS CANINE HEPATITIS VACCINE: 2 cc.-10 cc.

BRUCELLA ABORTUS VACCINE: 1 dose-5 x 1 dose-5 doses (25 cc.)

FELINE DISTEMPER VACCINE: 1 immunization (2 vials Vaccine, 2 vials Sterile Diluent, 2 cc.)

ANTI-FELINE DISTEMPER SERUM: 50 cc.

CARICIDE® Diethylcarbamazine TABLETS:
400 mg., 25's

DIETHYLSTILBESTROL SOLUTION: 10 cc.-50 cc.

LEPTOSPIRA CANICOLA-ICTEROHEMORRHAGIAE BACTERIN
Whole Culture Inactivated Vacuum-Dried.

Other products to be added.

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LEDERLE LABORATORIES DIVISION

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Here is the newest of the broad-spectrum antibiotics, clinically proved and ready for intravenous, intramuscular, intrauterine, intravaginal, intramammary, conjunctival, aural and topical use.
No other antibiotic is available to the profession only in such a wide variety of dosage forms. No matter what route of administration, there is a POLYOTIC designed for proper professional application and for dispensing. Available to Licensed Veterinarians Only.

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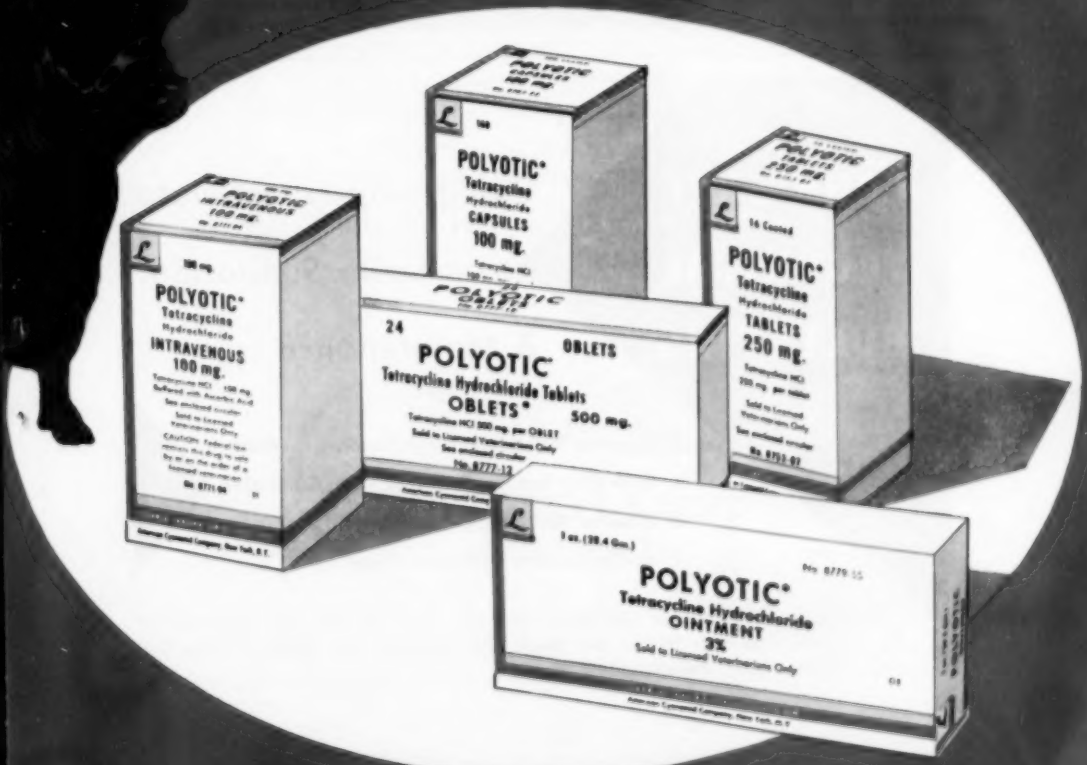

Dr. James C. Davis (KSC '49) was appointed, a few months ago, general sales manager of the Jensen-Salsbery Laboratories, Inc., Kansas City, Mo.

Fromm Laboratories' New Catalog of Veterinary Biologicals

Recently Fromm Laboratories, Inc., Grafton, Wis., issued a nicely illustrated new catalog of its veterinary biological products which are sold only to graduate veterinarians. It contains pictures of laboratory, control, and production phases of the company's operations and descriptions of the many special products it has developed for the prevention and treatment of canine and feline distemper, infectious hepatitis, mink distemper, rabies, swine erysipelas, and so on. Methods of preparation, potency and safety tests, indications, and prophylactic and therapeutic dosages make this catalog a useful reference for the products described.

Cutter Laboratories Purchases Ashe Lockhart, Inc.

Dr. Ashe Lockhart and Dr. Robert K. Cutter announced, on Feb. 15, 1955, that Cutter Laboratories had purchased, for cash, the veterinary biological firm of Ashe Lockhart, Inc., Kansas City, Mo.

Ashe Lockhart, Inc., a 28-year-old firm, sells a complete line of veterinary biological products to graduate veterinarians only.

Cutter Laboratories and Ashe Lockhart, Inc., will continue to operate as separate organizations. The long-established policies of Ashe Lockhart, Inc., as well as its present operating personnel will be continued under the direction of the present general manager, Joseph Knappenberger, D.V.M., who will head the company as its new president.

The board of directors of Ashe Lockhart, Inc. will be: Ashe Lockhart, D.V.M.; Clifford Haver; Joseph Knappenberger, D.V.M.; Guy A. Railsback, D.V.M.; Norwood H. Casselberry, D.V.M.; Harry R. Lange; and Robert K. Cutter, M.D.

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Containing Latest Data on Dairy Sanitation & Maintenance

1. Pipeline Milkers—Better Cleaning Methods
2. Bulk Milk Tanks—Practical Farm Sanitation
3. Modern Dairy Plant Sanitation
4. In-Place Lines—Efficient Cleaning

To get your free copies, just send your name and address and the names of the bulletins you wish. Write: B-K Dept., Pennsylvania Salt Manufacturing Co., 642 Widener Bldg., Philadelphia 7, Pa.

AN IMPROVED TREATMENT FOR KETOSIS

New FD-25 combines 25% fructose, a monosaccharide or fruit sugar, and 25% dextrose (anhydrous) in an aqueous solution.

FD-25 offers the following valuable advantages over dextrose solutions and other agents previously available for treatment of ketosis and other conditions accompanied by hypoglycemia.

1. *Quickly absorbed by the muscular tissues, being metabolized by a different mechanism*
2. *More effectively utilized.*
3. *More rapidly converted to hepatic and tissue glycogen.*
4. *Rapid recovery, with less likelihood of relapse.*
5. *Excreted less rapidly in the urine.*
6. *More economical than hormones, or than other sources of carbohydrates.*

Suggested dosage: Large animals, 50 to 500 cc.; small animals, 10 to 50 cc., preferably intravenously. Supplied in packages of twelve/500 cc. (Code: LEVEL).

FD-25

FRUCTOSE/DEXTROSE SOLUTION

FORT DODGE

FORT DODGE LABORATORIES, INC., Fort Dodge, Iowa

(CLASSIFIED ADS—*continued from p. 42*)

Tired of working alone with no days off? Desire contact with veterinarian with potential two-man practice; object, partnership. Graduate 1951, 3½ years of experience, mixed practice. Prefer large animal work in West or Middlewest. Married. Address "Box K 10," c/o JOURNAL of the AVMA.

Graduate of Vienna Veterinary College, 1953 (graduates of this year are recommended by AVMA for recognition by State Boards and other agencies) desires association with busy small animal practitioner leading to partnership. Licensed in Illinois but will go anywhere; age 28, married. Address "Box K 14," c/o JOURNAL of the AVMA.

Graduate of AVMA-approved school experienced in all phases of small animal practice desires position with small animal practitioner. Prefer southern or western states. Age 32. Address "Box K 17," c/o JOURNAL of the AVMA.

Woman graduate of approved school desires full or part-time position in New York City or vicinity. Telephone nights, KI 3-6123, or write "Box K 18," c/o JOURNAL of the AVMA.

Graduate approved school, 1953, desires permanent location in partnership or sale of mixed practice in Middlewest or West. Two years of experience in Middlewest; married. Address "Box K 22," c/o JOURNAL of the AVMA.

Wanted—Practices

Want to buy thriving small animal practice in Illinois, Indiana, Michigan, or Ohio. Prefer hospital with adjoining residence or apartment. Address "Box G 17," c/o JOURNAL of the AVMA.

Small animal hospital or good mixed practice wanted from owner wishing to retire late in 1955. All replies treated confidentially. Address "Box K 9," c/o JOURNAL of the AVMA.

Graduate, ISC 1952, wants to buy large animal or mixed practice or enter partnership in Iowa. Large and small animal experience. Married; veteran. Address "Box K 11," c/o JOURNAL of the AVMA.

Experienced young veterinarian wishes to purchase predominantly swine practice. Address "Box K 19," c/o JOURNAL of the AVMA.

(*Continued on p. 58*)

To insure prompt delivery, replies should be carefully addressed: Complete box number as given in the ad, AVMA, 600 S. Michigan Blvd., Chicago 5, Ill.

Pre-Treat Your Dog
against
TICKS, CHIGGERS, FLEAS,
OTHER TORMENTING INSECTS
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FLEAS OFF
BOMB TO PROTECT DOG
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Pre-treat your pet against the insects that torture him—shield him against irritating bites and infection. Conditions his dry skin—effectively deodorizes.
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Every Dog's Best Friend!
PROVED IN KENNELS & HOSPITALS EVERYWHERE
GET FLEAS-OFF FROM YOUR DEALER NOW!

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Compound E-Like and F-Like Hormones
(gluco-corticoids)

Physiological agents that control the mobilization and utilization of energy, inhibit cellular injury and the concurrent inflammatory reactions common to a wide variety of canine diseases.

Exogenous crystalline Vitamin B_{12}

Aids the re-establishment of neuro-muscular function, acts as an analgesic to relieve the pain in neuritis through pathways as yet undetermined.

Blocks development and progression of nervous symptoms in most instances.	CONTROLS NERVOUS SYMPTOMS
Alleviates pain—especially neurological in origin.	INHIBITS PAIN
Elevated temperatures tend to return to normal within 4-18 hours.	DEPRESSES FEVER
Irrespective of cause	CONTROLS INFLAMMATORY REACTIONS
Cannot be accounted for entirely by relief of pain and discomfort.	IMPROVES SENSE OF WELL-BEING
Simplifies lack of appetite problem.	IMPROVES APPETITE

FORMULA

A *LONG-ACTING* preparation designed for Veterinary use:

Each cc. contains

ACTH .....30 AVU*

Crystalline Vitamin B_{12} .....1000 mcg. in 16% gelatine with 0.5% phenol.

***ARMOUR VETERINARY UNIT**
Each unit provides the physiological response equivalent to 1 U.S.P. unit or 1 I.U.

Clinical trials showed an improvement in neurological status, or recovery in a large percentage of cases not amenable to other forms of therapy.

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2. Complications of the distemper syndrome, including:
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   b. Chorea
   c. Encephalitic symptoms
   d. Hard pad syndrome
3. Paralysis occasionally seen following rabies immunization.
4. Certain convulsive states.
5. Generalized asthenia of neurologic origin.
6. For the relief of pain in neuritis.

AVAILABILITY

ACB-12 (Armour) is supplied as a sterile 5 cc. multiple dose vial containing 30 A.V.U. highly purified ACTH and 1000 micrograms crystalline Vitamin B_{12} per cc.

CAUTION
The phenol content of ACB-12 (Armour) precludes its use in felines. Administer intramuscularly or subcutaneously under aseptic conditions

FEDERAL LAW RESTRICTS THIS DRUG TO SALE BY OR ON THE ORDER OF A LICENSED VETERINARIAN

ARMOUR VETERINARY LABORATORIES
A Division of Armour and Company
CHICAGO 9, ILLINOIS

Want to purchase small animal hospital or mixed practice in Virginia. Financially able to handle any good deal. Address "Box K 21," c/o JOURNAL of the AVMA.

Experienced veterinarian desires to purchase established small animal practice in New Jersey. Address "Box K 23," c/o JOURNAL of the AVMA.

For Rent

Dog and cat hospital for rent; established for 35 years in metropolitan New Jersey. Address "Box J 11," c/o JOURNAL of the AVMA.

For Sale or Lease—Practices

Busy dog and cat hospital for sale; long-established, lucrative practice on main thoroughfare in built up area Long Island, N.Y. Modern brick hospital, capacity 75. Ill health compels me to retire. Exceptional opportunity, 1 or 2 veterinarians. Address "Box D 5," c/o JOURNAL of the AVMA.

Central Pennsylvania mixed practice for sale. Brick house, two-car garage, office basement rear; $19,500, will finance. Address "Box J 2," c/o JOURNAL of the AVMA.

Four-room veterinary clinic and garage for sale; x-ray, instruments, drugs, etc.; $11,000; without adjacent lot, $8,500. Located on main highway. Address Dr. M. Parker, South 71, Fayetteville, Ark.

Veterinary hospital and practice for sale in one of the better localities of the Northwest; includes large and small animal practice for 2 energetic veterinarians. Best of reasons for selling; $10,000 will handle. Address "Box K 30," c/o JOURNAL of the AVMA.

Established mixed practice for sale or lease; predominantly dairy. Located in excellent central Oklahoma livestock area. New modern five-room hospital. Excellent opportunity. Address "Box J 23," c/o JOURNAL of the AVMA.

Mixed practice for sale in Middlewest city of over 10,000 population; includes modern office, complete drug and equipment supply, x-ray, steel kennels, operating table, et cetera. Grossing over $20,000; 90% large animal. Testing available. Address "Box K 1," c/o JOURNAL of the AVMA.

New small animal hospital with apartment for lease; mixed practice, 35 cages. Middlewest county seat town of 22,000; stable population, large trade area, great potential. Other interests. Address "Box K 2," c/o JOURNAL of the AVMA.

Fully equipped practically new hospital for sale; large and small animals, located west. Excellent established practice in fast growing area on main highway. Will support three veterinarians. Terms. Address "Box K 3," c/o JOURNAL of the AVMA.

Large animal practice available in North Central Ohio; 15 to 20% small animals and poultry. Convenient combination of home and office. Priced at value of real estate. Address "Box K 6," c/o JOURNAL of the AVMA.

Established hospital and residence for sale in Pennsylvania. Unusually fine facilities, ideal zoning, parking lot, surrounding ground. The hospital is widely known throughout the area. Terms available. Address "Box K 13," c/o JOURNAL of the AVMA.

Fabulous Las Vegas practice established 12 years. Sell equipment, drugs very reasonable. Good, long lease; new building, Main Street. Address "Box K 24," c/o JOURNAL of the AVMA.

Established, small animal hospital for sale; fully equipped, x ray, outdoor runs, landscaped 8-room colonial home. Main thoroughfare, 100,000 population, New York State. Large animal work optional. $15,000 to handle. Address "Box K 28," c/o JOURNAL of the AVMA.

(*Continued on p. 59*)

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MODERN SCIENTIFIC TEMPERATURE INDICATOR

A new electronic thermometer designed after months of working with physicians, dentists, veterinarians and nurses . . . pocket size . . . light weight . . . fast . . . accurate . . . rugged and dependable. Pays its way by reducing loss and breakage. See your supply house or write

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For lease, with option to buy, fully equipped modern small animal hospital located in Maryland. Address "Box K 15," c/o JOURNAL of the AVMA.

Mixed dairy and small animal practice for sale in northern Illinois. Completely equipped, instruments, drugs, x ray; no real estate. Gross, $25,000; price, $15,000; $8,000 down required. Address "Box K 20," c/o JOURNAL of the AVMA.

Remittance must accompany advertisement

Established, large animal practice for sale in central Illinois. Includes real estate, drugs, equipment. Reason for selling due to other interest. Price, $23,500. Address "Box K 25," c/o JOURNAL of the AVMA.

Well-equipped animal hospital for sale in Arkansas City of 18,000; 60% large animal, 40% small animal. Real estate and equipment, $23,000. Veterinarian leaving to devote full time to farms but will remain to acquaint purchaser with practice. Address Dr. J. A. Pulliam, Jonesboro, Ark.

Found

Found by U. S. Post Office, Philadelphia, a brown cowhide case with five keys: ILCO key 1011; Star Hardware Mfg. Co., key 5 EA 1; Keil key 60 D; Corbin, 446; Yale 1ED 2543. Address JOURNAL of the AVMA.

Miscellaneous

Building repairs, changes, alterations, additions—Get many usable ideas in Judy's Kennel Building and Plans, $3. Dog field changing constantly; keep up on judging, breeding, shows, methods through *Dog World* monthly; $3, one year; $5, two years, $10, five years. Judy Publishing Co., 3323 Michigan Blvd., Chicago 16.

(*Continued on p. 62*)

CASTRATION
SAFE . . . SURE . . . EASY

USE BURDIZZO
BLOODLESS CASTRATOR
USED SUCCESSFULLY OVER 30 YEARS.

YOU GET —
- Minimum growth set back
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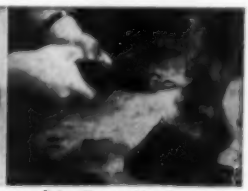
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Write for leaflet about this superb instrument, or ask your veterinary supplier. Nicholson Manufacturing, Inc. Box 7115, Denver 6, Colorado.

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precision veterinary equipment

for basic therapy in modern veterinary practice... basic formulations for use in the office, the hospital, and on calls...

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pharyngitis equine influenza foot rot otitis media bacterial infections associated

with canine distemper

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250 mg., 500 mg., 1.0 Gm., and 2.5 Gm. with Water for Injection, U.S.P.

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Exclusive Publication.—Articles submitted for publication are accepted with the understanding that they are not submitted to other journals, which is ethical publication procedure.

Manuscripts.—Manuscripts, including **footnotes, references,** and **tables,** must be typewritten, **double-spaced,** on 8½- by 11-in. bond paper, and the **original,** not the carbon copy, submitted. One-inch margins should be allowed on the sides, with 2 in. at top and bottom. Articles should be concise and to the point. Short, simple sentences are clearer and more forceful than long, complex ones.

Illustrations.—Photographs should be furnished in glossy prints, and of a size that will fit into the JOURNAL of the American Veterinary Medical Association with a minimum of reduction. Photomicrographs which can not be reduced should be marked for cropping to 1-column or 2-column width. Identifying marks within the photomicrographs, such as arrows, letters, or numbers, should be clearly marked with black India ink or white opaque ink to insure good reproduction and must be large enough to stand reduction, if necessary. Drawings, graphs, and charts should be made clearly and accurately in India ink on white paper and a glossy print of them submitted when possible. Numbers or letters appearing on graphs or charts should be large enough to allow for any reduction necessary for the chart or graph to fit JOURNAL pages. Blue lines in graph paper drop out in reproduction; therefore, if lines are required they must be drawn in black ink. All illustrations should bear the name of the author and the illustration number on the back.

Tables.—Tables should be simple and typed **double space.** Complex tables are not conducive to perusal. It is wiser to summarize complex material than to tabulate it.

References.—References should be typed **double space** and should be prepared in the following style: name of author, title of article, name of periodical with volume, year, and page numbers. References to journals not commonly known should give the complete name of the periodical, and where published so that they may be added to our reference files. When books are cited, the name of publisher, location, edition, and year should be given.

American Veterinary Medical Association
600 S. Michigan Avenue
Chicago 5, Illinois

(CLASSIFIED ADS—*continued from p. 59*)

Bovine Prolapse Preventer—Payton Utero-Vaginal Prolapse Preventer quickly easily applied to any size cow. Aluminum, re-usable, nonirritating, sanitary; noninterference with placenta release. Excellent for vaginal protrusion; dispensing. *See* article, JOURNAL of the AVMA, Dec., 1951. Only $3.00; two for $5.00; six for $12; prepaid. Dr. Jerome Payton, Morris, N.Y.

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Position wanted as assistant to progressive small animal practitioner by graduate of AVMA-approved school. Experienced; 6 years, general practice, 1 year, small animals (Army). Recently received final discharge from Army after two years of service. Married, ambitious, willing, and cooperative. Address "Box K, 27," c/o JOURNAL of the AVMA.

Graduate AVMA-approved school desires teaching position or association with ethical pharmaceutical establishment. Eleven years' experience mixed practice and government duties. Married. Address "Box K 26," c/o JOURNAL of the AVMA.

Graduate of Veterinary College, University of Berlin, 1914 (graduates of this year are recommended by AVMA for recognition by State Boards and other agencies) desires position as assistant or manager in small animal hospital. Experienced in every kind of veterinary practice. Six years in the United States; married, no children. Address "Box K 29," c/o JOURNAL of the AVMA.

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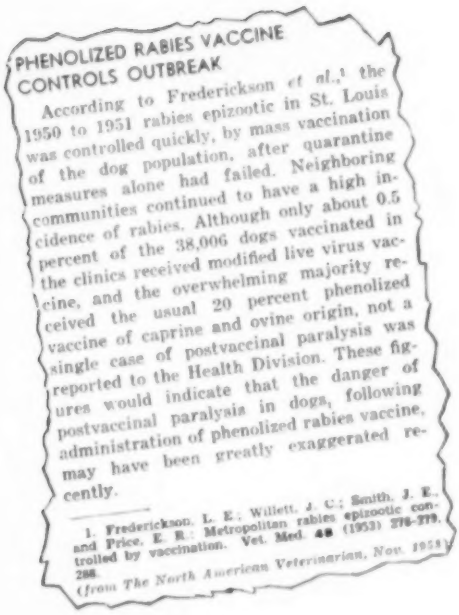

PHENOLIZED RABIES VACCINE CONTROLS OUTBREAK

According to Frederickson *et al.*,[1] the 1950 to 1951 rabies epizootic in St. Louis was controlled quickly, by mass vaccination of the dog population, after quarantine measures alone had failed. Neighboring communities continued to have a high incidence of rabies. Although only about 0.5 percent of the 38,006 dogs vaccinated in the clinics received modified live virus vaccine, and the overwhelming majority received the usual 20 percent phenolized vaccine of caprine and ovine origin, not a single case of postvaccinal paralysis was reported to the Health Division. These figures would indicate that the danger of postvaccinal paralysis in dogs, following administration of phenolized rabies vaccine, may have been greatly exaggerated recently.

1. Frederickson, L. E.; Willett, J. C.; Smith, J. E., and Price, E. R.: Metropolitan rabies epizootic controlled by vaccination. Vet. Med. **48** (1953) 278-279, 288.

(from The North American Veterinarian, Nov. 1953)

Experience —

The article at left as news is not new. It is timely only because it is human nature to seek the sensational, and overlook tried and time-proven methods. Phenolized rabies vaccine has been used as an efficient control measure for many years.

Efficiency —

Immunity developed by phenolized rabies vaccine (for a practical period of time) is as good as that from any other rabies vaccine, as reported by the Public Health Service.

Effort —

Throughout the years Lockhart has tried to have adequate supplies of Rabies Vaccine available for immediate shipment at all times. Even during the stress of the unprecedented demand upon the industry during the 1954 vaccination season, no one was without vaccine of Lockhart manufacture.

Emphasis—

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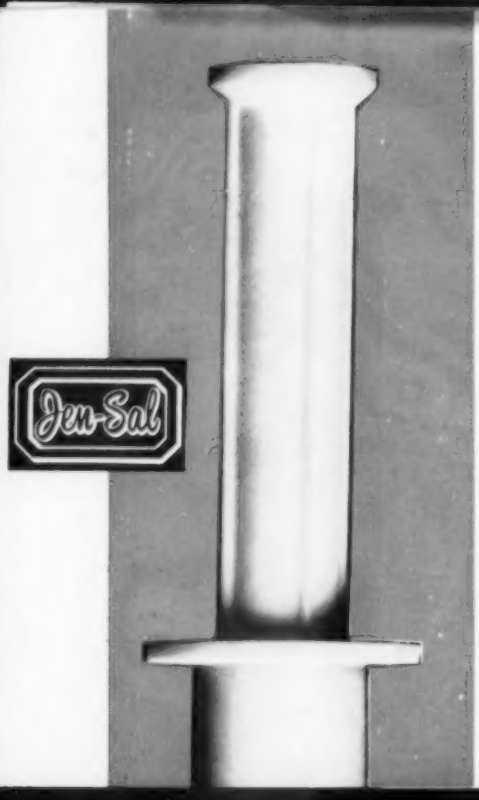

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